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No. 56.

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REMARKS

ON THE

COASTS OF LOWER CALIFORNIA AND MEXICO,

BY

COMMANDER GEORGE DEWEY,
UNITED STATES NAVY.

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1874.

~~VIII. 28~~

~~Nov 1308.74~~

Nov 1358.74

1878, 1875,

Th. Lifen

John D. H. Lifen

Hydrographic Office.

Washington, D.C.

FROM SAN DIEGO TO LA PAZ.

The entire coast of Lower California, from the boundary-line to La Paz, with the exception of San Lucas bay and the valleys of Todos Santos and San José del Cabo, is barren in the extreme. The land is generally high and precipitous and its approaches bold. There are many places where a ship may anchor and find some protection from the prevailing coast-wind.

General description of coast.

During the summer months, strong southeast gales of short duration are frequent in the vicinity of cape San Lucas, but rarely extend so far north as Cedros island. During the months of June, July, August, and September, the winds were from the northward and westward on the Pacific coast of the peninsula. The nights were ordinarily calm, with heavy dews. The breeze would spring up from the westward about 9 a. m., hauling gradually to the northward as the day advanced, and attaining its greatest force about 3 p. m. Occasionally we had light southerly winds; but the prevailing winds were from the northward and westward.

Winds.

In the gulf of California, during the latter part of May and the first of June, the winds were light from the southward and the weather pleasant.

Between San Diego and Cedros island, during the month of September, the weather was misty and foggy in the night, clearing up every morning about 10 a. m., and the remainder of the day clear and pleasant. After leaving Cedros island, there was a marked change in the weather; much less fog, the mornings clearing earlier, the temperature lower, and the winds lighter.

Weather.

We were near the land and within the influence of the regular tides, instead of the current which is encountered farther off shore. The tides are influenced by the prevailing wind, and set from one-quarter to three-quarters of a

Currents.

knot per hour. We experienced a strong current setting to the eastward around cape San Lucas.

Boundary.

The boundary-line between the United States and Mexico is marked by a monument of white marble, standing on a low table-land about 300 yards from the beach.

Coronados
islets.

The Coronados islets are barren rocks of trap formation, about seven miles from the coast, extending in a north west and southeast direction, about five miles. The southernmost is the largest, two and a half miles long, and its highest peak is about 800 feet high. The southeastern extremity of the islet bears S. $20^{\circ} 30'$ W. from the monument, and is an excellent land-mark in making San Diego. From the monument to Descanso point, sixteen miles, the coast trends S. 29° E., and is generally bluff, from 50 to 80 feet high, with a range of hills about 500 feet high a few miles inland, and a range of mountains back of them. One of these, called Table mountain, is 2,500 feet high, and remarkable, and another, a triple-peaked mountain a few miles south, is 2,700 feet high.

Monument to
Descanso point.

To the southward of Descanso point the land recedes somewhat, forming Descanso bay. Sugar-loaf rock bears S. $54^{\circ} 30'$ E. from Descanso point. It is a small low rock about 15 feet high, and apparently the only danger to be apprehended in the bay.

Anchorage.

There is an anchorage to the southward of the rock often used by the small coasters.

Descanso point
to point Sal-si-
Puedes.

From Descanso point to point Sal-si-Puedes, sixteen miles S. 39° E., the coast is generally sandy, with an occasional rocky cliff, and mountains rising a short distance inland.

Soundings taken three miles from land gave no bottom at forty fathoms.

Todos Santos
islands.

From point Sal-si-Puedes to Todos Santos islands is S. 28° E. 13 miles. These islets extend about two miles in a northwest and southeast direction. The western one is about one mile in length, east and west, a quarter of a mile wide, and from 30 to 60 feet high; the eastern one about the same length, northwest and southeast, half a mile wide, and 250 feet high. Both are surrounded by detached rocks and kelp; there is a boat-passage between them.

Point Sal-si-
Puedes to cape
San Miguel.

From point Sal-si-Puedes to cape San Miguel, S. $54^{\circ} 30'$ E. 12 miles, the coast is of sand bluffs and rocky cliffs

about 50 feet high, with high hills just back, and the mountain range a few miles inland, but presenting the appearance, to one a few miles at sea, of being immediately on the coast.

Cape San Miguel, the northern limit of Todos Santos bay, is high and bold.

From cape San Miguel to Encenada point, S. $81^{\circ} 30'$ E. ^{Cape San Miguel to Encenada point.} $5\frac{3}{4}$ miles, the coast is bold, with cliffs from 50 to 200 feet high. There is a large field of kelp near Encenada point, with sixteen fathoms of water at its southern end.

From Encenada point, which is 370 feet high, the coast ^{Anchorage.} recedes considerably to the northward and eastward, forming a snug anchorage, where vessels may anchor in from three to seven fathoms, sandy bottom, perfectly sheltered from all winds, except those from the southwest.

The observation-spot was at the west end of the sand- ^{Observation spot.} beach, where it joins the bluffs of Encenada point, (see plan of the anchorage.) From this point the land sweeps around to the southward and westward to point Banda, which is eight and a half miles distant, and is the southern limit of Todos Santos bay. The land at the bottom of the bay is low and sandy, and the soundings, at the distance of one mile, from three to five fathoms.

Point Banda is high, the highest peak being 500 feet, ^{Banda point.} with outlying rocks extending three-fourths of a mile in a northwesterly direction.

There is a whaling-station about three miles to the eastward of the point, in the bay, with a good anchorage sheltered from all winds, except those from the westward. ^{Anchorage.}

The channel between point Banda and Todos Santos ^{Channel.} islands is about three miles wide and free from all dangers, except the outlying rocks off point Banda mentioned above.

From point Banda to point Soledad, S. $41^{\circ} 15'$, E. 12 ^{Banda point to point Soledad.} miles, the coast is high and precipitous, with deep water close to. Point Soledad is low and rocky, rising abruptly to a height of 500 feet.

Soledad rocks, one mile west of the point, are of small extent. They are 20 feet high, and are surrounded by kelp. There is a clear passage between them and the point, keeping ^{Passage.} clear of the kelp on both sides.

Anchorage. To the southward of the point, near two houses, there is good anchorage in from 8 to 10 fathoms, sheltered from the coast wind.

Point. Soledad to cape Colnett. From point Soledad to cape Colnett is S. 35° E. $41\frac{3}{10}$ miles. The coast recedes somewhat between the two points and is generally low, rising rapidly inland.

Cape Colnett is a remarkable headland, nearly semicircular in form, with perpendicular cliffs from 100 to 350 feet high, of a dark-colored rock, (nearly black,) on a bed of light sandstone, the coast retaining the same appearance for about 10 miles to the northward. The cape bearing ENE., distant 7 miles, shows dark with yellow sand beyond.

Anchorage. From cape Colnett the coast trends to the northward and eastward for a short distance, forming Colnett bay, where good anchorage may be found in from 6 to 8 fathoms, sandy bottom, sheltered from northerly winds.

Cape Colnett to San Martin's island. From cape Colnett to the eastern end of San Martin's island is S. $38^{\circ} 15'$ E. 30 miles. For about ten miles to the southward of the cape the coast is lower than above, with shoal water and numerous fields of kelp making off three or four miles from the land. Thence to San Martin's island the coast is low and sandy, the water shoal as above, but as far as we could see with no outlying dangers.

San Ramon bay. Four miles to the northward of San Martin's island is the bay of San Ramon, formed by a slight indentation in the coast-line, which is here of low sand-hills from 50 to 100 feet high. At the southern extremity of this bay, extending two and a half miles, is a remarkable perpendicular cliff of dark rock from 150 to 200 feet high.

Channel. Two miles and a half west of this cliff is San Martin's island, with a clear passage between them carrying from 10 to 15 fathoms, apparently free from all dangers.

San Martin's island. San Martin's island is of volcanic origin, nearly circular in form, with its greatest diameter extending two miles in an east and west direction. It is quite barren, producing nothing but the prickly pear, and a little stunted bush growing among the rocks.

The highest peak is 400 feet and is the crater of an extinct volcano, its diameter being 350 feet and its depth about 40 feet.

There is a good anchorage on the southeast side of the island, off the mouth of a small lagoon; and a better one on the northeast side in a snug little cove, which we have named Hassler cove, where a ship may anchor in 8 or 9 fathoms protected from all winds except those from the north. The eastern side of the cove is formed by huge boulders which extend off to the northward, making an excellent breakwater. Anchorage.

Beno rock lies S. $1^{\circ} 30'$ W. $3\frac{2}{10}$ miles from the eastern end of San Martin's island. It has from 9 to 12 feet of water on it with 5 fathoms close to, and no bottom at 17 fathoms, 400 yards from it. The sea does not break on it in moderate weather. Beno rock.

From the east end of San Martin's island to Reef point is S. 46° E. $8\frac{3}{10}$ miles. The coast between is formed of low sand-hills except at about five miles to the northward of the point where one of the "Five Hills" borders directly on the sea. San Martin's island to Reef point.

From Reef point to cape San Quentin, S. 80° E. $1\frac{1}{2}$ miles, the coast is low and rocky with numerous projecting points and outlying rocks over which the sea breaks heavily. Reef point to cape San Quentin.

Afuera point is an outlying rock near cape San Quentin, and is the southernmost point. Mount Mayo, the highest part of the cape, is 210 feet in height, and is in the center of the peninsula forming the western side of port San Quentin.

Entrada point is low and rocky, but may be approached to within a quarter of a mile.

The land about port San Quentin (see plan) is low and sandy, and entirely without vegetation. The five remarkably placed mountains of volcanic origin, on the north side of the bay, caused one of the early navigators to call this the "bay of Five Hills." Port San Quentin.

These mountains are from 800 to 1,100 feet high, except the western one, previously mentioned, which has an altitude of 460 feet. Five Hills.

No vessel drawing over 12 feet should attempt to enter this bay without either buoing the channel or sending a boat ahead, as the channel usually shifts with every south-east gale, and is narrow and tortuous with not over three fathoms on the bar. For small vessels it is a most excellent harbor, affording perfect protection from every wind. Directions.

To enter the port, steer for Entrada point, (the last rocky point passed in entering,) giving it a berth of a quarter

of a mile; then steer NW. about 800 yards, until you pass a sandspit making out between Entrada and Sextant points; then head up for the latter point W. by N., passing it close to, as the channel at this place is very narrow.

Sextant point is low and sandy. After passing it, follow the shore-line, and anchor in 5 or 6 fathoms half a mile inside the point.

Cape San Quentin to point Baja.

The coast about the bay and for ten miles to the southward is low and sandy, with high hills a short distance inland. The land then becomes higher for a few miles and of a dark color, decreasing in height again gradually until it reaches point Baja, a low sand-cliff S. $31^{\circ} 30'$ E., $25\frac{1}{2}$ miles from cape San Quentin.

There is a reef and line of kelp extending for a short distance to the southward from point Baja, and vessels entering the bay of Rosario should give it a good berth.

Bay of Rosario.

South of point Baja the land recedes considerably, forming the bay of Rosario, where vessels may find protection from the coast-winds. The country about the head of the bay near point Baja is fertile and cultivated, and supplies of vegetables, fresh beef, and water may be obtained there. The old mission of Rosario is a few miles inland.

Fresh provisions.

Point Baja to point San Antonio.

From point Baja to point San Antonio S. 40° E. 14 miles, the coast is of sand-bluffs, from 50 to 100 feet in height, with high hills and table-lands a short distance inland.

San Gerónimo island.

From point Baja to San Gerónimo island is S. $22^{\circ} 30'$ E. $9\frac{1}{2}$ miles. The island is about a mile in length, NNE. and SSW., and a third of a mile wide. Seen from the northward it shows three hills of moderate elevation, the highest 150 feet, and it is low at both ends. The island is of sandstone formation, and is covered in many places with a mixture of sand and guano. It is surrounded by kelp and outlying rocks, except on the southeast side at the foot of the highest peak, where there is a small shingle-beach.

Channel.

There is a passage about four miles in width between the island and the mainland; but it should not be used, except in cases of great emergency, as kelp covers nearly the entire space, and no doubt covers many hidden dangers, though we were unable to find any in the short time devoted to that purpose.

Sacramento reef bears S. 40° E. 3½ miles from the southern end of San Gerónimo island, and S. 62° W. 3½ miles from point San Antonio. (See plan of island and reef.) It is about a mile in length, northwest and southeast, and half a mile wide. There are several rocks awash and above water, and the sea constantly breaks over them. The reef is surrounded by thick kelp, which extends nearly to San Gerónimo island and about half way to point San Antonio, between which and the reef there is a passage with from 6 to 12 fathoms. Although there is shoal water for many miles to the southward of the island, we saw no indications of rocks or reefs; still there may be many hidden dangers, and a vessel should not approach this part of the coast without using great caution and sounding before running through the thick kelp. Point San Antonio is low, with high hills a short distance back.

From point San Antonio to Canoas point, S. 70° 30' E. 35 miles, the coast retains the same character, being of sand-bluffs, and is rather lower near point San Antonio than at Canoas point, which latter is a sharp perpendicular sand-bluff about 100 feet high. High table-lands rise immediately from the coast to a height of 1,000 to 2,000 feet.

From Canoas point to cape Blanco is S. 67° E. 23½ miles. The coast recedes somewhat between the points, forming Canoas bay. It retains the same general character as above. Cape Blanco is a perpendicular sand-cliff about 100 feet high, with the coast-range just back.

From cape Blanco to Cone point, S. 43° 30' E. 17½ miles, the coast is lower, and is a succession of points and intervening bays, one of which, Blanco bay, affords good anchorage with a northerly wind.

Cone point is a remarkable red cone 200 feet high, with many detached and outlying rocks extending off about half a mile to the southward. When first seen from the northward it looks like an island.

From Cone point to Manna point is S. 60° E. 4½ miles. The later point is low and rocky with sand-hills rising to a height of about 80 feet a quarter of a mile inland.

False bay lies between these two points.

La Playa Maria bay is about six miles in length and two in depth, lying between Manna and Black points, the latter

being low and of very dark rock, backed by white sand a short distance inland.

The land about the bay is low and sandy, and as barren as the most of this coast. There is a hill, called Station peak on Lieutenant Wood's plan, 256 feet high, near the bottom of the bay.

Anchorage.

There is good anchorage in six fathoms, about a mile from the beach, where a ship may find shelter from the northerly coast winds. Manna point from the southward shows as a dark, low point, with the red cone above it.

Manna point to
Lagoon head.

From Manna point to Lagoon head, S. 40° E. $45\frac{1}{2}$ miles, the coast is moderately low, with high ranges of hills a short distance back. It is a succession of points with shallow bays intervening.

Twenty-one miles S. 52° E. from Manna point, is Elide island, a small bare rock about 40 feet high and a mile in circumference. There is a little guano on it, and it is covered with sea-fowl and seals. It lies about half a mile from the mainland, and there is an anchorage on the southeast side.

Santa Rosalia
bay.

Santa Rosalia bay lies just to the southward of Elide island, and affords good anchorage with northerly winds. The point forming the southern limit of the bay is low and dangerous, rocks and shoals making off from it at least a mile.

To the southward of this point, which I have not seen named upon any chart, the coast recedes considerably, and with Lagoon head, S. 6° E., 17 miles, for its southern limit, forms another large bay which I have not named. Lagoon head is a high headland of volcanic origin, the highest peak being 474 feet above high-water mark. When seen from a distance of a few miles at sea, it looks like an island, as the low land inside it cannot be seen. This headland can be seen 30 or 40 miles in clear weather.

Anchorage.

From Lagoon head the coast turns abruptly to the eastward about two miles, sweeping gradually to the southward, and forming a small open bay, affording good anchorage anywhere near the land, in from 3 to 9 fathoms, sandy bottom.

High land extends about two miles east to a point near the northern end of the upper lagoon; thence, to the eastward and southward, extensive plains and marshes stretch

away to the great lagoons, high mountain-ranges being visible in the interior.

From Lagoon head to point San Eugenio the coast sweeps to the southward and westward, forming the great bay of Sebastian Viscaïno, its northern extremity being cape Blaneo. ^{Lagoon head to point San Eugenio.}

The entrance to upper lagoon is S. $58^{\circ} 30'$ E. $4\frac{1}{5}$ miles from Lagoon head, the coast being merely a strip of low sand-beach and hillocks, partially covered with stunted bushes. Extensive shoals make off several miles in a northwesterly direction from the entrance.

S. 32° W. $8\frac{3}{10}$ miles from the upper lagoon entrance, is the entrance to Black Warrior lagoon, a narrow strip of sand separating it from the bay. Shoals make off for a long distance northwest of the entrance. We had 4 fathoms five miles from land, with heavy breakers inside of us.

From this entrance to that of Scammon's lagoon is S. $33^{\circ} 30'$ W. $13\frac{1}{2}$ miles, the coast being a low sand-beach, with numerous hillocks from 10 to 30 feet high. Extensive shoals also make off here, 4 fathoms being obtained six miles from land, the water gradually shoaling and obliging us to haul off about a mile until we deepened the water to 5 fathoms.

The entrance is marked by white sand-bluffs on both sides, from 30 to 40 feet high. The Santa Clara mountains are visible in the direction of point San Eugenio.

From Scammon's lagoon to point San Eugenio the coast has the same character for several miles, when the bluffs become high and the mountains approach the coast. Nearer point San Eugenio the character of the coast changes, rocky formations predominating.

Chester islet is a small rock, 1 mile north of the point, about a mile in circumference, and covered with guano. There is another smaller rock between it and the point. Point San Eugenio is a low, dark, rocky point, projecting toward Natividad island, having a reef a quarter of a mile to WSW., and another somewhat longer of rocks above water to N. by E.

From point San Eugenio to Morro Redondo, the southernmost point of Cedros, or Cerros island, is N. $36^{\circ} 45'$ W. $14\frac{1}{2}$ miles. The point is a rocky cliff about 30 feet high, with many ^{Point San Eugenio to Morro Redondo.}

outlying rocks, and a round hill or cone of moderate elevation just back of it.

Anchorage. There is good anchorage to the northward of Morro Redondo, in from 7 to 10 fathoms, sandy bottom, half a mile from the beach.

About 4 miles to the northward of Morro Redondo, on the east side of the island, is an excellent watering place. It may be recognized by a patch of tall, rank grass back of a sand-beach of about 250 feet in length, and the only one in that vicinity. It is about a mile to the southward of the easternmost point of the island, and the first arroyo to the southward.

Cedros island. Cedros island is from 18 to 20 miles in length, N. by W. and S. by E., and from 3 to 8 miles in width. It is a high, barren island, of volcanic origin, and evidently contains much mineral wealth. Occasionally in the valleys there are a few stunted bushes and a little coarse, rank grass. The highest peak, near the southern part of the island, is 4,275 feet high, and may be seen on a clear day 60 miles.

San Benito islands.

Twenty miles N. 58° W. from cape San Augustin, the southwestern extremity of Cedros island, are the San Benito islands, a group of three small, barren rocks, extending for about 3 miles east and west, and 1 mile north and south. The westernmost is the largest; it is a circular, flat-topped island, about 200 feet high, with a mound in the center about 500 feet high. At its northeast end is a low point running out a quarter of a mile to the westward.

The middle island is low, and about one-third of a mile long, NNW. and SSE. There is a narrow passage filled with rocks between this and the western island.

The eastern island is three-quarters of a mile long, north and south, and has three peaks on its northern end about 200 feet high. There is a boat passage between this and the middle island, from a quarter to half a mile wide, with several rocks, some above water. The islands are surrounded with kelp and detached rocks.

Anchorage. There is an anchorage southeast of the western island, in 12 fathoms, sandy bottom, outside of the kelp; and a good landing on the northeast side of the same island on a shingle beach to the northward of a red rock.

There are two sharp pinnacle rocks, with only 6 feet of water on them, two miles W. by S. of the mound on

the western island. They are about 80 feet apart NE. and SW.; the southern one about 30 feet and the northern one about 10 feet in length on top, and from 2 to 4 feet wide. The sea breaks on them in all weathers. At 100 feet east of the rocks there were 12 fathoms, and no bottom at 20 fathoms at any other place around them at the same distance.

From Morro Redondo to the eastern point of Natividad ^{Natividad is land.} island is S. 19° E. 11½ miles. There is a clear passage of nine miles in width between Cedros and Natividad islands, with 18 to 30 fathoms of water.

The latter island is about 4½ miles in length NW. and SE., and from half a mile to a mile and a half in width, being widest at the southeastern extremity. It is of moderate elevation, hilly, entirely barren, and surrounded with kelp.

The highest part is near the western end, and is about 400 feet. This part is very rocky, having a reef running out, mostly under water, connecting it with Maria rock.

There is also a short reef of rocks off the southwest point, and another off the northwest point. A sand-spit forms the easternmost extremity of the island.

Off the southern part, bearing ENE. from it, is a square, flat-topped rock about 25 feet high, connected with the island by a reef, upon which the sea breaks continually.

Sail rock, about 40 feet high, lies about 400 yards off the southeastern point of the island. A reef extends S. by W. half a mile from it, on which the sea breaks only at long intervals in fine weather.

Natividad channel lies between the island of the same name and the mainland, and is five miles wide. On the Natividad side there is much foul ground. A three-fathom shoal, having 9 and 10 fathoms around it, lies in the following position: south end of Natividad island, N. 68° W.; northeast end of island, N. 26° W., and point San Eugenio, S. 75° E. 3½ miles. The sea breaks over it only at long intervals in fine weather. ^{Natividad channel.}

There is a small six-fathom shoal N. 60° W. 2¼ miles from point San Eugenio, covered with kelp. A large field of kelp stretches off for several miles to the southward of the point.

In using this channel, keep about a mile and a half from the point, until the kelp-patch is passed, then steer parallel with the coast.

Point San Eugenio to Kelp point.

From point San Eugenio to Kelp point, the northern limit of port San Bartolomé, is 13 miles in a northeast direction.

Eight miles from point San Eugenio is a low point about 20 feet high with many detached rocks, over which the sea breaks heavily. This we have called Breaker point. Back of it the land rises to a height of about 800 feet.

Thence to San Bartolomé bay the land is lower, but barren and rugged in the extreme.

Kelp point is about 30 feet high, of pudding-stone conglomerate on a bed of sandstone, with many outlying rocks, the whole surrounded with kelp. Mount San Bartolomé rises to a height of 850 feet a short distance from the point.

Port San Bartolomé.

Port San Bartolomé is from 3 to 4 miles in diameter, circular in its general form, and perfectly land-locked in its southeastern part, which is called Turtle bay.

There is a reef of rocks running in a northwesterly direction for about a mile from cape Tortolo, to the eastward of which a ship may anchor in from 5 to 8 fathoms, sheltered from every wind.

Cape Tortolo is a rocky point about 20 feet high, rising rapidly to an elevation of 425 feet. Mount Belcher, a mile south, is 436 feet high. The land about the bay consists of high bluffs and is entirely barren, the Santa Clara range rising to an altitude of 3,000 feet a few miles in the interior. We saw no indication of fresh water here.

Cape Tortolo to Morro Hermoso.

Thurloe head, 3 miles southeast of cape Tortolo, is a long cliff, high, rocky, and steep on the western side, with a more gradual slope on the southeastern side, and many outlying rocks. There is a large quantity of kelp between cape Tortolo and Thurloe head, the last we saw in this vicinity.

Seven miles southeast of Thurloe head is Morro Hermoso, a bare, rocky cliff, rising to a height of 900 feet, one mile from the coast, which is here low.

Anchorage.

Between these two points the land recedes, forming an open bay in which a ship may anchor in 6 or 7 fathoms, sheltered from the coast winds.

Morro Hermoso to point San Pablo.

From Morro Hermoso to point San Pablo is S. 49° 45' E. 28 miles. Between these points the coast recedes several miles, forming the open bay of San Cristobal, and consists generally of bluffs and sand-cliffs, from 50 to 100 feet high, the coast-range rising to a height of several hundred feet,

a short distance inland. The soil is of several colors, brown and gray predominating.

In the vicinity of point San Pablo and a few miles in the interior are extensive table-lands. Point San Pablo is a dark slate-colored bluff, 636 feet high. To the northward and near it is a remarkable range of peaks from 2,000 to 2,500 feet high, of variegated color, which I have called the *Sierra Pintada*, as I believe it to be the range so named by Sebastian Viscaino in 1599. It corresponds to his description, being "of bare and naked rocks of varied and beautiful formation, where great mines of gold and silver were supposed to be."

Table mountain, 12 miles to the eastward of San Pablo point, is about 2,200 feet high, and can be seen many miles at sea.

San Roque point, 5 miles S. $54^{\circ} 30'$ E. from point Pablo, San Pablo bay. is a light-colored bluff from 30 to 50 feet high, the land rising to an elevation of 150 feet a short distance inland. Between these two points lies San Pablo bay, about 2 miles deep, apparently free from all dangers, and affords good anchorage in from 10 to 15 fathoms, half a mile from shore.

From San Roque point to Asuncion point is S. 75° E. $7\frac{1}{2}$ miles, the coast receding somewhat and forming the open bay of San Roque. San Roque point to Asuncion point.

The land about the bay is low, with table-lands a few miles inland.

San Roque island lies two miles southeast of San Roque point, and about the same distance from the bottom of the bay. It is a low, rugged rock, about 40 feet high, partly covered with gravel and lightsand. It is about a mile long, NW. and SE., and a third of a mile wide. The passage between the island and the mainland is filled with rocks and reefs, and is safe only for boats.

Asuncion point is low, with a cone-shaped mound, 75 feet high at its outer extremity, and moderately high hills a short distance inland.

The northern end of Asuncion island is one mile S. by E. Asuncion isl. and. of Asuncion point. The island is about one mile in length, N. by W. and S. by E., and half a mile wide. It is of sandstone and entirely barren, and is highest toward its southern end, where it reaches 100 feet. It is surrounded by detached rocks and kelp, and a reef extends nearly half way

across the passage between the island and the opposite point.

This passage carries 5 fathoms of water, but should be used with caution and only in cases of emergency.

Asuncion point
to San Hipolito
point.

From Asuncion point to San Hipolito point is S. $66^{\circ} 30'$ E. 22 miles. From the former the coast turns abruptly to the northward and eastward, and then sweeps around to the southward and eastward in nearly a straight line to the latter.

Anchorage.

Asuncion bay is to the eastward of the point of the same name. It is from 3 to 4 miles deep and is said to afford good anchorage. The coast is low and sandy between the points, table-lands of moderate elevation rising a short distance inland.

San Hipolito point is low and sandy, with a shoal making off to the southward and westward about a mile.

San Hipolito
point to Abreojos
point.

From this point to Abreojos point is S. 68° E. 21 miles.

San Hipolito bay is formed by the coast falling away 3 or 4 miles between the points. The coast is low and sandy, rising gradually to a height of 200 feet, with table-lands about 600 feet high a few miles inland.

Abreojos point is low and sandy, on a bed of pudding-stone rising about 5 feet above high-water mark, the sand rising from 10 to 15 feet above it.

There is a reef extending a short distance south of the point, and many detached rocks on the eastern side.

A very dangerous reef of rocks extends off six miles WSW. from the point, with a passage between the reef and the point; but this passage is dangerous and should be used with great caution. A small rock about four feet high is on the inner end of the reef.

Shoal water makes off two or three miles southeast from the point. Indeed, the whole locality is dangerous, and no vessel should approach this part of the coast nearer than 8 or 10 miles except by day, and then with caution.

Six miles to the northward and westward of Abreojos point is the entrance to a small lagoon.

Point Abreojos
to point Santo
Domingo.

From Abreojos point the coast trends to the northward and eastward, forming, with the west end of a sand island $16\frac{1}{2}$ miles N. 88° E. from the above-named point, the open bay of Ballenas. About five miles to the eastward of Abreojos point is the entrance to a lagoon that will admit only the smallest craft.

Just to the northward of the sand island mentioned above is the entrance to San Ignacio lagoon, about two miles wide, and said to have a narrow passage of 12 feet at high water. The sea was breaking heavily over it at the time of our visit.

From this point the coast trends to the southward and eastward 37 miles to point Santo Domingo.

The whole coast is low and sandy, with several lagoons just back of the beach. The entrances to all of them, with the exception of that to the San Ignacio lagoon, are narrow and shallow, being merely boat passages in smooth weather. There are heavy breakers and shoals extending off the mouths of all of them.

A few miles back of the coast are table-lands from 200 to 500 feet high.

Point Santo Domingo is a remarkable perpendicular rocky cliff, of dark color, 175 feet in height, the cliff extending for several miles above and below the point.

From point Santo Domingo to point San Juanico, S. 65° E. 27 miles, the coast is low, generally of sand-hills from 100 to 200 feet high, with high table-lands a few miles back. Point Santo Domingo to point San Juanico.

About 12 miles southeast of point Santo Domingo is a small cove called Equaña bay, where a ship may find shelter from the coast wind. Point San Juanico is low and sandy. To the southward and eastward of it is an open bay where ships may anchor in 5 or 6 fathoms, a mile and a half from the beach, and find some shelter from the coast wind, avoiding the sand-spit which makes off about a mile to the southward of the point. Anchorage.

Here is the entrance to the San Juanico lagoon, which is used by the small coasters, carrying 6 or 7 feet, at the highest spring tides. The lagoon extends inland several miles, but is very shallow.

From point San Juanico to cape San Lázaro the coast trends nearly south 77 miles. About 10 miles below the former point the table-lands cease, and thence to cape San Lázaro the coast is merely a low sand-beach, with high land many miles in the interior. Point San Juanico to cape San Lázaro

From Boca de San Georgia, in latitude 25° 38' N., to Magdalena bay, there is an extensive lagoon, or canal, which is used by the small coasting vessels.

In latitude $25^{\circ} 30'$ N. there is a shallow entrance to the lagoon called Boca de Santo Domingo, and in latitude $25^{\circ} 17'$ N. another called Boca Solidad. Neither of these entrances can be used except by boats or flat-bottomed vessels of light draught.

Shoal water and breakers extend off all these entrances, as indeed off the whole of this coast. We had from 7 to 12 fathoms two or three miles from the beach, the entire distance between the points.

Cape San Lázaro is a high, remarkable looking headland of volcanic origin, which can be seen for many miles, and when first made out has the appearance of an island. It extends about four miles N. by W. and S. by E., and is from 600 to 1,300 feet high.

Cape San Lázaro to cape Corso.

From the south extremity of this headland to cape Corso is S. 50° E. $7\frac{1}{2}$ miles. The coast recedes between the two points, forming the bay of Santa Maria, 3 miles deep, where good anchorage may be found in 7 or 8 fathoms, a mile from the beach. The land around the bay is low and sandy.

Cape Corso is a bold, rocky point, fronted by a white-sand bluff, which nearly encircles it.

Cape Corso to Entrada point.

From cape Corso to Entrada point is S. 58° E. $10\frac{1}{2}$ miles, the coast between being a succession of rocky points and intervening sand-beaches, the land rising abruptly to a height of from 500 to 1,600 feet. Mount Isabel, the highest point, is 1,592 feet high.

Magdalena bay.

From Entrada point to cape Redondo is S. $67^{\circ} 30'$ E. $2\frac{7}{10}$ miles, the entrance to Magdalena bay being between them.

Entrada point is a dome-shaped hill about 200 feet high, connected with the mainland by a narrow strip of sand and rock but a few feet above high-water mark. There are several outlying rocks from 10 to 12 feet high quite near it, and a reef making off southeast about 600 yards, over which the sea generally breaks.

Cape Redondo is a round, rocky headland, nearly 100 feet high, the land rising rapidly back of it to 500 or 600 feet. A reef extends off to the northwest about 600 yards from the cape. The sea generally breaks over this reef in all weathers, though Lieutenant Tanner observed an interval of two hours in which there was no break on the outer rock.

It was perfectly calm and the sea smooth at the time, the interval including the last of the flood and the first of the ebb.

Lieutenant Tanner also says, "I observed at the beginning of the flood a heavy over-fall at least 400 yards from the end of the reef, where Lieutenant Taussig found from 7 to 9 fathoms of water."

This may account for the rock reported near the middle of the channel.

The sailing directions given in Imray's "North Pacific Pilot," Part I, for the entrance into, and navigation of, Magdalena bay, are all that are necessary.

The channel between the reefs off cape Redondo and Entrada point is at least two miles wide and free from all dangers. Sir Edward Belcher's chart is all that is required. There is no fresh water upon the land to the left of Entrada point, (which should be called Magdalena island.)

The few families living at Man-of-war cove send from 40 to 60 miles for water, which is only tolerable. On Margarita island, however, near the southern end, there is a spring of excellent water.

The tide runs with considerable force through the entrance to the bay, from one to two knots per hour.

From cape Redondo to cape Tosco, the southern extremity of Margarita island, is S. 60° E. 20½ miles. The island is high and barren, and, like Magdalena island and cape San Lázaro, is of volcanic origin. It presents a bold, rocky face its entire length, except about midway where the coast falls away somewhat, forming an open bay called Pequeña. The land here is low and sandy. Mount Margarita, near the southern end of the island, is 2,000 feet high. Two remarkable peaks just south of Pequeña bay, about 1,000 feet high, are called the Sisters.

Cape Tosco is a bold, rocky point, with a reef of rocks extending off SSE. about 600 yards, over which the sea breaks constantly. From cape Tosco to Santa Maria point, the southwest end of Cresciente island, is N. 27° E. 3½ miles. Between these points is another entrance to Magdalena bay, called Rehusa channel. It is, however, too shoal and intricate for anything but boat-navigation.

Cresciente island is a low sand island in the form of a crescent, about 10 miles long in an ENE. and WSW. direc-

tion. It is separated at its eastern end from the mainland by a narrow boat-passage.

El Conejo point, in latitude $24^{\circ} 22'$ N., is on the eastern side of this boat-passage. It is low and rocky, backed by a dome-shaped mound about 50 feet high.

El Conejo point
to Lobos point.

From this point the coast trends to the southward and eastward ninety-one miles to Lobos point, a high, rocky promontory near Rio Todos Santos. The coast between these two points is low, sandy, and barren, with table-lands from 100 to 200 feet high a mile or two back, rising gradually to an altitude of 2,000 feet twenty miles inland. A ship may anchor off any part of this coast in fine weather, in 8 or 10 fathoms, a mile or two from the beach. The soundings are regular, shoaling gradually toward the beach, and, as far as we could determine, with no hidden dangers.

Anchorage.

Point del Marquis, in latitude $23^{\circ} 56' 30''$ N., is low and rocky, forming a sharp, projecting point on the coast-line, and is the first rocky formation seen after leaving Rio Todos Santos.

About five miles to the northward of point Lobos is a grove of palms quite near the beach. About three miles to the southward of the grove is point La Poza, the end of a table-land extending from the vicinity of point Lobos. It is a perpendicular bluff about 50 feet high, with numerous outlying rocks.

The Todos Santos river, which empties into the sea at this point, is a small stream flowing the whole year and watering the fertile valley of the same name.

Todos Santos.

Todos Santos village, containing about 800 inhabitants, is situated about three-quarters of a mile back from the beach.

This valley is said to be one of the most fertile on the peninsula, there being an abundance of water for irrigating purposes. The gardens and fields are of many acres in extent.

Figs, oranges, and sugar-cane are produced, the last being by far the most important, many thousand pounds of sugar being made every year.

Fresh provis-
ions.

This is an excellent place for a ship to get fresh provisions and water.

San Pedro point, S. 54° E. 1 mile from Lobos point, is the eastern extremity of a rocky promontory about 200 feet

high, of which the latter-named point is the western extremity; the land rising rapidly to a height of 500 feet or more.

There is a small cove to the northward of Lobos point, where landing is practicable in good weather. We established our observatory here.

San Pedro is a small settlement, situated on the bay of that name, 2 miles from San Pedro point. Landing is said to be practicable here in ordinary weather.

From Lobos point to San Cristobal point, S. 33° E. 30 miles, the coast is generally low, rising to a height of from 500 to 1,000 feet a short distance inland. It is a succession of sand-beaches and rocky patches, the latter forming slight projections in the coast-line. Lobos point to San Cristobal point.

Seven miles to the southward of Lobos point is the open bay of Pescaderos, with a small fishing village half a mile from the beach. About 10 miles to the northward of San Cristobal point is La Tinaga (the pitcher,) a rocky bluff of moderate elevation, so called because of a cavity or basin on its summit, which, filling with water during the wet season, affords a watering-place for the cattle of the neighboring ranch.

About 5 miles south of La Tinaga is Cerro de las Playas, a conical hill about 500 feet high back of a rocky point.

Point San Cristobal is a bold rocky bluff, about 50 feet high, with many outlying rocks.

S. 60° E. 7 miles from point San Cristobal is cape Falso, the southernmost point of the peninsula, and for this reason Point San Cristobal to cape Falso. sometimes called cape San Lucas.

The coast to within a mile of cape Falso is low and sandy, rising gradually to hills of moderate elevation a mile or two inland. The cape is a rocky bluff, with many detached and outlying rocks.

From cape Falso to cape San Lucas (Los Frailes) is N. 70° E. about 3 miles. The coast between is a succession of sand-beaches and bold rocky bluffs, against which the sea breaks heavily even in the finest weather. Cape Falso to cape San Lucas.

North of cape Falso, a short distance inland, are the Paps of San Lucas, two remarkable peaks about 600 feet high.

Los Frailes are a collection of rocks 217 feet high, forming the extremity of cape San Lucas. They rise perpendicu-

larly from the water, and their appearance is very rugged. There is an archway under one of them, through which the sea rushes with great force.

These remarkable rocks, high, bold, and upon certain bearings grotesque in their outlines, backed by a conical mound of 200 feet in height, ending a short range of hills, form a headland which once seen will never be forgotten.

From Los Frailes to Cabeza Ballena is N. 51° E. $3\frac{2}{10}$ miles. San Lucas bay lies between these two points. (See plan.)

The anchorage is extremely limited in this bay, being confined to the northwestern side, the deep water there extending almost up to the beach.

In entering the bay steer about WNW. for Ritchie's, a large white house of two stories and the first object seen in making the anchorage. Have the anchor all ready, as the bank is very steep, and come to in 6 or 7 fathoms, a third of a mile from the beach.

This is an unsafe anchorage in the summer or wet season, as southeasterly gales are both frequent and heavy.

Fresh provisions. Excellent fresh beef and vegetables can be obtained here at moderate prices, and there is also an abundance of tolerable fresh water. The best water is obtained at the wells sunk in the bed of the arroyo, about half a mile from the beach. Wood can also be had. The settlement consists of about a dozen houses, with a population of 150 persons.

Cabeza Ballena is a rocky bluff 200 feet high, of dark color and with detached rocks extending a short distance from the point.

Cabeza Ballena to Palmia point. From this point to Palmia point is N. 42° $30'$ E. $9\frac{1}{2}$ miles. For about three miles to the northward and eastward the coast is rocky and moderately high; thence to Palmia point it is low and sandy, sloping gradually to a mountain-range a short distance inland.

Point Palmia, the southwestern extremity of San José bay, is low and rocky, with detached rocks. It is backed by a mound 315 feet high. A short distance to the westward and on the coast is Cerro Colorado, 540 feet high, and of red sandstone. This is an excellent landmark, being the only formation of the kind between cape San Lucas and San José bay.

From Palmia point to point Gorda is N. 48° E. $8\frac{1}{2}$ ₀ miles. The land recedes between the two points, forming the open bay of San José del Cabo, (see plan.) Palmia point to point Gorda.

A ship may anchor in from 7 to 9 fathoms, a third of a mile from the beach, anywhere in the bay; but the best anchorage is about a mile to the northward of Palmia point, in 9 fathoms, sandy bottom, and abreast of a small sand-beach. Here, too, is the best boat-landing. Bay of San José del Cabo.

A heavy swell sets into the bay at all times, making it anything but a desirable anchorage or landing.

The land about the bay consists of low sand-beaches and rocky patches, rising to moderately high hills a short distance inland, with the mountain ranges of Victoria and San Lázaro farther back.

The river of San José empties into the sea about three miles from Palmia point, watering an extensive valley of the same name for many miles in the interior.

The village of San José del Cabo is on the bank of the river about a mile from the sea. Here a ship may obtain a supply of wood, water, beef, and vegetables at a moderate price.

Salatea is the salt-marsh between the beach and San José. (See Imray's "North Pacific Pilot.")

Point Gorda is a round rocky bluff 300 feet high.

Cape Polfia, about a mile to the northward and eastward, is low and rocky, with a heavy surf breaking upon it at all times.

Ten miles N. 22° $30'$ E. from this latter cape is cape Porfia, a bold rocky bluff about 60 feet high, which may be recognized by its light grayish color, differing several shades from other points in the vicinity. The coast between these two capes is moderately low and rocky, with occasional sand-beaches sloping back gradually to the mountain-range in the interior. About midway between the points is a low sand point, with discolored water extending off a mile or more. Cape Polfia to cape Porfia.

From cape Porfia to cape Pulmo is N. 2° $30'$ W. $8\frac{1}{2}$ miles, the coast being of the same character as that to the southward. Cape Porfia to cape Pulmo.

Cape Pulmo is a bold rocky bluff, 339 feet high, surmounted by a hill 796 feet high. There is a small white outlying

rock, about 12 feet high, half a mile to the northward of the middle of the bluff.

Cape Pulmo to
High bluff.

There is a rocky bluff 71 feet high, surmounted by a hill 334 feet high, N. 22° W. $4\frac{3}{6}$ miles from cape Pulmo. Shoal water extends off this headland a short distance in every direction.

This head-land we called High bluff, and N. 35° W. $6\frac{3}{6}$ miles from it we established our observatory, on a low sandy point.

High bluff to
point Pescaderos.

Between High bluff and Observation point is an open bay from one mile and a half to two miles in depth.

Observation point is low, with sand-spits and heavy surf on its northern and western sides. The point and southern shore of the bay should not be approached nearer than a mile without the greatest caution. We anchored about two miles inside the point and one mile from shore, in seven fathoms water. There was a bar a quarter of a mile inshore of us extending nearly to the point, with from 3 to 5 fathoms on it and indications of shoaler spots.

From Observation point to point Pescaderos, N. 52° W. 19 miles, the coast falls away from 3 to 5 miles, forming Palmas bay. This, like all the other bays between cape San Lucas and San Lorenzo channel, is entirely open to easterly winds, and affords no shelter in the dreaded south-easterly gales.

In the northern part of the bay, the hills extend to the water with rocky cliffs. The southern part is less broken, the coast being low and sandy, rising gradually to the coast range of mountains a few miles inland. On the south side of the bay is quite an extensive plain covered with cactus and low bushes.

Point Pescaderos is bold and rocky, with hills around it rising to a considerable height.

Point Pescade-
ros to point
Arena.

From point Pescaderos to point Arena is 19 miles, N. 34° W.

Point Perico is 15 miles from point Pescaderos and very similar to it in appearance.

The land recedes between these points, forming the En-cenada de Muertos, an open bay very much the same in character as that of Palmas. The land back of it rises to a height of nearly 5,000 feet, with a gradual descent on the

south side of the bay to a sand-beach from 10 to 50 feet high, and on the northern to a broken, rocky shore.

Anchorage can generally be found within half a mile of the beach, in from 8 to 15 fathoms.

From point Perico to point Arena the coast is low and sandy, broken frequently by rocky patches from 10 to 20 feet high.

Point Arena is low and sandy,

From point Arena to point Gorda, N. 67° W. 12 miles, the coast recedes, forming the large open bay of Ventana, or Ceralbo, about five miles deep in its deepest part, (called by the natives Ventana.) To the southward of the bay lies an extensive plain covered with cactus and stunted bushes. On the northwestern side of the bay, the high coast-hills rise abruptly from the water's edge.

Ventana, a small settlement, lies about nine miles to the westward of point Arena, and at the bottom of the bay.

Anchorage may be had in any part of the bay near the coast. Anchorage.

Fresh water, cattle, hogs, poultry, &c., may be procured here. Fresh provisions.

Point Gorda is a bold, rocky bluff, with high land back of it.

From point Gorda to Coyoté point, the entrance to San Lorenzo channel, is N. 60° W. 16 miles. Point Gorda to Coyoté point.

Between these points the coast is bold and rocky, with occasional sand-beaches, the country back of it being broken and mountainous.

Ceralbo island, of volcanic origin, high and barren, lies off this part of the coast. Its highest peak has an altitude of about 2,500 feet. The island extends about 14 miles NW. and SE., and its greatest width is about four miles. Ceralbo island.

There is a fine channel between this island and the mainland, 5 miles wide at point Arena, and $6\frac{1}{2}$ miles at point Gorda. It is apparently free from all dangers.

Anchorage may be had on the southwest side of the island to the northward of a sand point. The tides set through this channel with considerable force, at times 2 knots per hour. Anchorage.

There is a small, low, dangerous rock, about 12 feet high, $5\frac{1}{2}$ miles NW. $\frac{3}{4}$ N. of Ceralbo island, and a sunken rock

south of it, about 100 yards, with only 2 fathoms of water on it.

We were unable to find any other rocks in this vicinity, nor did we hear of any. Coyoté point is moderately low, with a small outlying white rock a few feet from it.

San Lorenzo
channel.

San Lorenzo channel lies between the Espiritu Santo island and the mainland, and is about $3\frac{1}{2}$ miles wide. It should be used with caution, as dangerous rocks exist on both sides of it, leaving a clear passage of $1\frac{1}{2}$ miles between them. (See plan.)

Directions.

To enter the channel from the southward and eastward, steer WNW. $\frac{1}{2}$ W. for the Red mound on Espiritu Santo island, giving Coyoté point a berth of $\frac{1}{2}$ a mile. When Lobos point bears N. by W. and San Lorenzo point SW. by S., steer W. by S. until you open Lobos rocks beyond Diablo point; then Red mound will bear NW. $\frac{1}{2}$ W., and you will be clear of all dangers.

Aranco Cabello point is low and sandy, sloping back gradually to mountains 1,000 feet high.

San Lorenzo and Diablo points are moderately high bluffs.

There is another channel with 4 fathoms of water near Espiritu Santo island, and between it and San Lorenzo reef.

The entrance to Pichilingue harbor lies about 4 miles south of Diablo point.

Colorado point to the southward of the entrance is low and of a red color.

Pichilingue
harbor.

Pichilingue harbor, though small, is one of the best on the coast. A ship may anchor in 7 fathoms sheltered from every wind. (See plan.)

Prieta point, the entrance to La Paz harbor, is SE. by S. 2 miles from Colorado point. It is a sharp perpendicular bluff, about 50 feet high, the land sloping back gradually from it.

La Paz.

La Paz lies about 3 miles to the southward of Prieta point. A ship drawing 16 or 17 feet may enter at any stage of the tide, but should take a pilot, as the channel is narrow and tortuous.

Anchorage.

The best anchorage is $\frac{1}{2}$ a mile to the southward of the wharf in $3\frac{1}{2}$ fathoms of water.

The harbor is protected on its western side by a low marshy peninsula called *El Mogote*. There is a boat-passage to the bay near Mogote.

La Paz is the seat of the territorial government of Lower California, and contains about 2,000 inhabitants.

Supplies of various kinds, such as fresh beef, bread, wood, and water may be obtained in small quantities. Fresh provisions, wood, &c.

FROM LA PAZ TO THE COLORADO RIVER.

The bay of La Paz, the largest on the eastern side of Lower California, is forty miles deep and from sixteen to twenty miles wide. The western side, from Mechudo head to the bottom of the bay, presents a bold shore with precipitous cliffs or high mountain-slopes, affording no anchorage or shelter for ships; thence sixteen miles to El Mogote point, the coast is low and sandy, with shoal water making off one or two miles. Bay of La Paz.

Mechudo head, at the northern extremity of the bay, is N. 59° W. 22 miles from the north end of Espiritu Santo island. It is a bold perpendicular cliff of variegated color, about 200 feet high, surmounted by a dome-shaped hill 750 feet in height. Back of this hill, and a short distance inland, is mount Mechudo, 3,000 feet in height, and the highest land in this vicinity.

Espiritu Santo island lies in the entrance to the bay of La Paz, and is separated from the mainland by San Lorenzo channel, which is three and a half miles wide. The island is 9 miles long, NNW. and SSE., and from 2 to 4 miles wide. It is of volcanic origin, and from 200 to 1,200 feet high. A remarkable red cone, 197 feet high, near the southwestern end of the island, is an excellent land-mark in navigating San Lorenzo channel. Espiritu Santo island.

There are two small open bays, Ballena and Gabriel, on the southwestern side of the island, in which vessels may anchor and find shelter from northerly and easterly winds (The plans of these bays, by Captain Kellett, R. N., are all that are required.)

There are several detached rocks and islets off the western side of this island, the largest of which, Ballena, is about a mile to the northward of Ballena bay. There are also two or three off the northern end of the island, called Los Islotes.

Mechudo head
to San Everisto
point.

From Mechudo head to San Everisto point is NW. by N. 12 miles. The latter is a rocky headland 462 feet high.

About two miles to the southward of San Everisto point, a low sandy point makes out, to the southward of which is good anchorage in 5 or 6 fathoms, half a mile from the beach.

San Everisto
point to Nopolo
point.

Nopolo point, N. 47° W. $6\frac{7}{10}$ miles from San Everisto point, is a rocky cliff with a rugged peak 1,656 feet high immediately back of it. Between these two points the land is high and precipitous.

San Josef isl-
and.

The south end of San Josef island bears N. 33° W. 21 miles from the north end of Espiritu Santo island. It extends nearly eighteen miles nearly parallel with the coast, NW. $\frac{1}{4}$ W. and SE. $\frac{1}{4}$ E., and is from two to six miles wide, the northern end being narrowest and terminating in a narrow, sharp point. It is rather higher than Espiritu Santo, several of its peaks having an altitude of over 2,000 feet, and is of volcanic origin. It is separated from the mainland by a deep channel from 3 to 5 miles wide, except abreast of Nopolo point, where it is but $2\frac{7}{10}$ miles in width. Here, a low sand-spit makes off from the island toward Nopolo point.

Amortajada
bay.

There is a good anchorage in Amortajada bay, on the southwest side of the island, in 7 or 8 fathoms, where a ship is sheltered from every wind, particularly the dreaded "cordonazos" or southeasterly gales. Fresh water may be obtained here.

Several rocks and islets lie off the southwestern end of the island, the largest of which, San Francisco, is $1\frac{3}{10}$ miles south of San Josef. It is 600 feet high, $1\frac{3}{10}$ miles long, and about one mile wide. The passage between it and San Josef is dangerous, as it contains many rocks above and under water.

There are two dangerous rocks about 5 feet high, called Seal rocks, lying off San Francisco island, about three miles and a half from the mainland, with the following bearings: The northwestern end of San Francisco, east $1\frac{2}{3}$ miles; Salinas point, NW. by N. $5\frac{5}{10}$ miles.

In using the channel between San Josef island and the mainland at night or in thick weather, it is better to keep the mainland close aboard, as there are no dangers on that side.

N. 75° E., 9 miles from the north end of San Josef, are the rocky islets of Las Animas, about 90 feet in height. There is a deep passage between them and San Josef.

San Diego island lies N. 7° W. $5\frac{5}{10}$ miles from the north end of San Josef. It is nearly a mile long, NE. and SW., and its highest point is 600 feet. A reef makes off about a mile from its southwestern point, ending in a small rock awash. There is another reef $1\frac{7}{8}$ miles south of the highest peak, with from 4 to 5 fathoms on it. A reef also makes off about half a mile from the northern end of San Josef, leaving a clear passage of about 3 miles between that island and San Diego; but it should be used with caution, as there may be other rocks in it which we were unable to find.

Santa Cruz island lies $4\frac{5}{8}$ miles N. 11° W. from San Diego island. It is about 3 miles long N. and S., and about 2 miles wide. It is 1,500 feet high, and extremely barren and rocky.

San Marcial point is a moderately high rocky cliff, surmounted by a peak 500 feet high. To the southward of the point is the small bay San Marte, where a ship may find an anchorage in good weather. There are from 10 to 12 fathoms within a third of a mile from the small sand-beach at the bottom of the bay. A dangerous reef extends off about a mile southeast of the point, on which the sea breaks in nearly all weathers.

San Marcial rock lies one mile N. 13° E. of San Marcial point, and is surrounded by reefs and shoals. It is of small extent and 25 feet high. There is a boat-passage between it and the point.

From San Marcial point to Punta Coyote, N. 48° W. 25 miles, the coast is of the same general character as that to the southward, rising rapidly from the sea to a height of from 1,000 to 2,000 feet.

Three miles to the westward of San Marcial point is the small bay of Agua Verde. There is good anchorage here in ordinary weather, and fresh water may be obtained from the rancho near the beach.

Three and a half miles above this is San Cosme point, a rocky cliff about 225 feet high.

The small rocks San Cosme and San Damien, the former 75 feet high and the latter 45 feet, lie about a mile to the northward of the point. Seven and seven-tenths miles N.

San Marcial
point to Punta
Coyote.

Anchorage-
water.

25° W. from San Cosme point is a small white rock 30 feet high. It is about 3 miles from the main land and $5\frac{1}{2}$ miles S. 70° W. from the northwest end of Montserrate island. Twelve miles above San Cosme point is another prominent point, of which we were unable to ascertain the name. There are several detached rocks lying to the northward and westward of this point, three of which, from 70 to 80 feet high, and pinnacle-shaped, are known as Los Candeleros.

From this point to Punta Coyote the land sweeps to the westward, forming an open bay, in which there are many rocks above and under water.

Puerto Escondido.

To the southward of Punta Coyote is the small bay known as Puerto Escondido, a perfectly secure harbor for small vessels in all weathers.

Loreto.

Just above Punta Coyote is a small bay known as Chuenque bay. About eleven miles above the point is the small village of Loreto. The coast here is low and more fertile in appearance than any we saw after leaving La Paz.

Anchorage.

Above Loreto the coast sweeps to the northward and eastward $3\frac{5}{8}$ miles to the low sandy point of Tierra Firma.

In this bay there is an excellent anchorage sheltered from every wind except from the northward and eastward. In good weather the best anchorage is off Loreto, in 8 or 9 fathoms, half a mile from the beach. In standing in from the NE. bring the church and Sugar Loaf peak in range, and anchor as directed above.

Loreto contains about 150 inhabitants. There are two or three fine gardens, where oranges, figs, dates, &c., and in their season, vegetables, are raised.

Fresh provisions, wood, &c.

A ship may obtain fresh beef, wood, and water at all seasons.

The south end of Santa Catalina island bears N. 62° E. about 15 miles from San Marcial point. It is between 7 and 8 miles long, north and south, and from 600 to 800 feet high.

The south end of Montserrate island bears N. 14° W. 8 miles from point San Marcial, and about the same distance from the mainland. It is about 4 miles long, parallel with the coast, and from one to two miles wide. It is from 200 to 500 feet high and presents a more inviting appearance

than Santa Catalina. It is, however, like all the other islands hereabouts, of volcanic origin and perfectly barren. Three miles north of the island are two low rocky islets known as Las Galeras, and a dangerous rock only two feet above water.

Twelve miles N. 61° W. of Montserrate island is Punta Baja, the south end of Carmen island. This island is 16 miles in length, NNE. and SSW., and its breadth gradually increases until it becomes five miles and a half wide near its northern end. It is of volcanic origin and has a range of peaks its entire length, from 400 to 800 feet high.

Carmen island.

On its eastern side, near the northern end, is the fine bay of Salinas, in which protection may be obtained in all winds except those from the southeast. The best anchorage is in 5 or 6 fathoms, one mile south of the white house with a cupola, at the head of the bay. The well-known saltmine is situated at the head of the bay and about half a mile from the beach. The pond is about one mile and a half long and one mile wide, and the supply of excellent salt from it seems inexhaustible. The plan of the bay by Captain Kellett, R. N., is all that is necessary, except in the names of the points. Morro point, of his plan, is known here as Punta de Perico from its supposed resemblance to a parrot's beak. It is a sharp, rocky cliff, surmounted by a peak of reddish color, 460 feet high, with a round detached rock very near the point.

Salinas bay.

Lobos point, the northern extreme of the island, is a moderately high rocky point surrounded by detached rocks.

Between Lobos and Lintorera points is a small open bay known as Puerto de la Lancha, in which protection may be obtained from southerly winds.

Cholla islet is a small low sand island off the northwestern end of the island and near to it. To the southward of this islet is a small bay known as Puerto Ballandra.

Puerto Ballandra.

About midway between the south end of Carmen island and the mainland is the island of Danzante. It is three miles and a half long, nearly parallel with the coast, is slightly crescent-shaped, very narrow, and from 100 to 450 feet in height. There is a clear passage nearly a mile wide between it and Carmen island.

North 17° E. 7 miles from Loreto is the small island of Coronados. It is of small extent, rising in the center to an

Loreto to Coronados island.

altitude of 534 feet. A low sand-spit extends off some distance from its southwest side, leaving but a narrow channel between the island and the mainland. It is only safe for small vessels.

Anchorage. To the northward of this sand-spit is an excellent anchorage in a southeaster.

Coronados island to Mangles point. Mangles point bears N. 40° W. from the center of Coronados island and is 10 miles distant from it. The shore is bold, and immediately back from the coast is from 1,500 to 2,000 feet high.

Mangles point is a moderately high bluff, with cliffs of variegated color from 200 to 300 feet high to the northward.

Anchorage. To the southward of Mangles point is a good anchorage in a northwest wind. The only dangers to be apprehended are some low rocks 2 feet above high water, about two miles and a half southeast from the point. In standing in for the anchorage, it is better to pass close to the point, where is plenty of water and no hidden danger.

Mangles point to Pulpito point. N. 25° W. 15 miles distant is Pulpito point. Between these two headlands are several bays, the largest of which is San Basilio, a few miles to the southward of Pulpito point, and between it and Basilio point. Three and a half miles to the northward of Mangles point is Mercenarios point, a rocky cliff of dark sandstone, surmounted by a red cone 519 feet high. Above this latter point the coast recedes, forming, with Basilio point, a small open bay called San Juanico cove.

There are several rocks above and under water in this bay, and it should be used with great caution.

San Basilio point is a low, rocky cliff about 50 feet high, of red sandstone.

Anchorage. Pulpito point, so called from its imagined resemblance to a pulpit, is a bold headland 470 feet high, and when first seen from the southward appears like an island, the land connecting with the coast-range being low. To the southward of this point is an excellent anchorage, in 5 or 6 fathoms, half a mile from the beach, where a ship is well sheltered from northwest winds.

Six miles N. 11° W. from Pulpito point is the small island of Ildefonso, 350 feet high, and a mere barren rock.

From Pulpito point to Santa Teresa point, N. 42° W. 12 miles, the coast falls away several miles to the northward, forming the large, open bay of San Nicolas. The land about this bay is low, the coast range being farther inland than to the southward. Pulpito point to Santa Teresa point.

Santa Teresa point is low and rocky, with many outlying rocks.

From Santa Teresa point to Punta Aguja or Needle point, the coast trends N. 60° W. 20 miles. This latter point is low and ill-defined. All this part of the coast is high and precipitous, affording no shelter in any but westerly winds. Santa Teresa point to Punta Aguja.

The anchorage off Mulege is a little to the northward of Sombrerito rock, in 9 or 10 fathoms half a mile from the beach. This rock, which is 119 feet high, is at the northern entrance of the small Rio Santa Rosalia, on the banks of which, two miles from the sea, is the village of Mulege. Mulege anchorage.

Back of Sombrerito a short distance is a high mountain of a reddish color, known as Colorado mountain, 836 feet high.

The entrance to the river is narrow and shallow, with several rocks in the channel covered at high water. There are never more than 9 feet at the mouth at high water. The tide rises 5 feet.

In standing in for the anchorage off Mulege, do not bring Sombrerito to the westward of SW., as there is much foul ground between that rock and Gallito point.

It is said that there is a rock having 3 fathoms of water over it, on a line between Sombrerito and Punta Aguja. We were unable to find it although we searched diligently for two or three days.

Mulege contains from 800 to 1,000 inhabitants.

Wood, water, and excellent fresh beef may be obtained at all times, and several varieties of vegetables and fruits in their season. Fresh provisions, wood, &c.]

There are several fine gardens on the banks of the river, and a great deal of enterprise is shown by the inhabitants.

The entrance to this extensive bay is two miles to the southward of Sombrerito. It is between Gallito and San Domingo points, and is rather less than two miles in width. The bay extends southeast about twenty-two miles and varies in width from two to six miles. There are numerous Concepcion bay.

small islands scattered over its surface, and several small harbors where vessels may anchor sheltered from every wind.

Near the bottom of the bay, on the west side, is a remarkable well of fresh water, which rises and falls with the tide.

Sombrerito
point to Santa
Inez point.

From Sombrerito point to Santa Inez point, N. 10° W. $7\frac{5}{10}$ miles, the land is low, and sweeps to the westward somewhat, forming the bay of Santa Inez.

Santa Inez point is low; S. 50° E., 2 miles distant, is the largest of a small group called the Santa Inez islands. They extend about 2 miles, nearly north and south. They are surrounded by shoals and sunken rocks, leaving a narrow but safe passage between them and Santa Inez point, where a ship may anchor and find shelter in northwest

Santa Inez
point to point
Virgenes.

winds. Two miles to the northward of Santa Inez point is Chivato point, also low and sandy. From Chivato point to point Virgenes is, N. 46° W., $36\frac{5}{10}$ miles. For about 17 miles above Chivato point the coast sweeps a little to the westward, and is generally low, with the coast-range farther back.

The island of San Marcos lies from $2\frac{1}{2}$ to 4 miles off this part of the coast. It is about 5 miles long, nearly parallel with the coast, and is from 1 to $2\frac{1}{2}$ miles wide. The highest peak has an altitude of 670 feet.

Lobos rock, 20 feet high, lies half a mile off the south end of the island, and a reef, with 1 fathom of water on it, extends a mile farther to the southward, leaving a clear and safe channel of 5 or 6 fathoms, about a mile wide, between the island and the mainland.

Anchorage.

There is an excellent anchorage for small vessels under the south end of the island.

Water.

Fresh water may be obtained.

Rocks above water extend about a mile to the northward from the north end of the island. An excellent quality of gypsum is found here in large quantities.

San Lucas cove.

The entrance to San Lucas cove lies $5\frac{8}{10}$ miles S. 78° W. from the northern end of San Marcos island. It affords an excellent anchorage in all winds for vessels drawing 7 or 8 feet.

N. 35° E., 14 miles from the north end of San Marcos island, is the highest peak of Tortuga island. This island is about two miles long, east and west, and its highest peak is 730 feet. Tortuga island.

Santa Agneda point lies N. 60° W. 8 miles from the north end of San Marcos island. It is low, with a small rock 10 feet above water, lying half a mile to the northward of it. From this point to Santa Maria cove the coast trends N. 36° W. 10½ miles.

There are several cañons along the coast, known as Providencia, Purgatorio, Soledad, and Santa Rosalia, and extensive copper-mines at each one a few miles from the coast. Santa Maria cove affords shelter in northwest winds, but is open to the southeasters. Eight miles above this cove is cape Virgenes, a moderately high headland, with the high coast-range a short distance inland. From 12 to 14 miles inland are the three remarkable mountains known as Las Tres Virgenes, the highest having an altitude of 7,060 feet. Between the Virgenes and the coast is Santa Maria mountain, 4,650 feet high.

From cape Virgenes to Trinidad point, N. 62° W. 27 miles, the coast is low, the mountain-range being several miles in the interior. About eleven miles from cape Virgenes is Santa Anna point, above which is an open bay of the same name, where shelter may be found in a southeast wind. Cape Virgenes to Trinidad point.

A small fresh-water creek empties into the sea here. It may be recognized by the grass and trees on its banks. Anchorage.

Trinidad point is a moderately high bluff, with a hill 137 feet high just back of it.

From Trinidad point to cape San Miguel is N. 18° W. 21 $\frac{3}{10}$ miles. The land falls away to the westward above the former point, forming, with San Carlos point 9½ miles above, the open bay of San Carlos. Trinidad point to cape San Miguel.

San Carlos point is low, with a small open bay to the northward of it, called San Juan Bautista bay.

Cape San Miguel is a bold, rocky bluff, 175 feet high, with several outlying rocks a short distance to the eastward of it.

To the southward of this cape is an excellent anchorage in a northwest wind, in 7 or 8 fathoms, half a mile from the small sand-beach, a mile inside the cape. Anchorage.

All the coast between Santa Anna point and cape San Miguel is low, and in many places covered with cactus, trees,

and bushes. A few miles to the southward of cape San Miguel is a cactus plain extending several miles inland.

San Miguel
cape to point San
Gabriel.

From cape San Miguel to San Gabriel point, N. $22^{\circ} 30'$ W. $14\frac{3}{10}$ miles, the coast is generally low, being formed of low bluffs and sand-beaches, the coast range a short distance inland.

Anchorage.

Above the former cape the land sweeps to the westward, making an open bay two or three miles deep. A mile to the southward of San Gabriel point is the small open bay known as Santa Teresa bay, where excellent anchorage in north-west winds may be found in 7 or 8 fathoms a third of a mile from the beach.

Point San Gabriel is low, with high volcanic hills just back of it.

The island of San Pedro Martin is N. 86° E. 30 miles from the above point. It is a barren triangular rock less than two miles in extent, the highest part having an altitude of 1,200 feet. There are three small islets off its southern end, the smallest being half a mile distant.

San Gabriel
point to cape Las
Animas.

From San Gabriel point to cape Las Animas is N. 52° W. 30 miles.

Anchorage.

Immediately to the northward of the former is the fine bay of San Francisquito, in which a ship may find shelter from either the northwest or southeast winds, the prevail-winds in the gulf.

Three and eight-tenths miles to the westward of San Gabriel point is point San Francisquito, low and rocky. From this point the coast sweeps to the westward for several miles, forming the open bay of San Rafael; it then trends to the northward to cape Las Animas.

Three miles to the southward of this last-named cape are two dangerous rocks called Barnabé rocks. They are rather more than half a mile from the shore, and have but 2 feet on them at low water.

Anchorage.

There is a tolerable anchorage to the southward of the reef which unites them to the shore.

Off this part of the coast lie the islands of San Lorenzo, Sal-si-puedes, Isla Raza, and Isla Partida.

The passage between these islands and the mainland is called the Sal-si-puedes channel.

San Lorenzo
channel.

San Lorenzo, the southernmost and largest of these islands, extends twelve miles WNW. and ESE. It is between

one and a half and three and a half miles in width, and, like most of the other islands of the gulf, is high and barren. It is of volcanic origin, and is entirely destitute of vegetation. The highest peak, near the southern end of the island, has an elevation of 2,075 feet.

About two miles and a half from its northern end is a narrow boat-passage through the island.

A mile to the northward of San Lorenzo is the small island of Sal-si-puedes, about one mile and a half long, WNW. and ESE., and not over half a mile in its widest part. The highest peak is 500 feet. There are several detached rocks near the island. Sal-si-puedes island.

There is a tolerable anchorage under the northern end of San Lorenzo, in a southeast wind. Anchorage.

Isla Raza is about 100 feet in greatest height. It lies N. 18° W., 5 miles from Sal-si-puedes, and is nearly white from the deposit of guano on it. There is a small white rock $1\frac{3}{10}$ miles to the northward and westward of the island, and another awash between the two. Isla Raza.

Five miles to the northward and westward of Isla Raza is a small island called Isla Partida, from the fact that at a distance it has the appearance of being two islands. It is about one mile and a half long, nearly north and south, and is formed of two peaks about 500 feet high, joined by a low and narrow strip of land. Isla Partida.

Two miles to the northward of this island is a rock about 200 feet high, with a reef making off to the northward and eastward about a mile, and ending in a rock two feet above water at low tide.

About 10 miles to the eastward of San Lorenzo island is the island of San Estevan, about $4\frac{1}{2}$ miles long and 3 miles wide. It is from 800 to 1,500 feet high, and is rocky and barren. San Estevan island.

There are two tolerable anchorages off its southern end on either side of a low sand-spit. Anchorage.

North 64° W. 12 miles from cape Las Animas is another high headland, to which no name is given. The land falls away to the westward between the two, forming the bay of Las Animas. Las Animas bay.

It is about six miles deep, and affords good anchorage for either of the prevailing winds. Anchorage.

To the northward of this nameless headland is the fine Angeles bay

bay of Angeles, between four and five miles deep, and about six miles wide at the entrance. There are no less than fifteen islands and islets in this bay, the largest of which, Smith's island, is nearly four miles in length and one in width. It is a high, flat-topped island, its greatest altitude being 1,200 feet.

From the south-
ward.

To enter the bay from the southward, it is better to follow the coast, passing in between the first island and the mainland.

Anchorage.

On the western side of the bay is a small cove formed by a sand-spit extending to the southward and eastward. Here an excellent anchorage may be found, in 7 or 8 fathoms at low water, sheltered from all winds.

Water.

Fresh water is also to be obtained from the springs near this anchorage. The springs are at the foot of a high, round-topped mountain, 3,260 feet in height, and are marked by reeds and bushes in their vicinity.

The spring tides rise about 12 feet in this bay.

From the north-
ward.

To enter the bay from the northward, follow the coast, passing between it and Smith's island, keeping about a mile from the shore, until the spring is opened, to the southward of the sand-spit mentioned above.

Remedios bay.

From the headland (to the southward of Angeles bay) to Remedios point is N. 45° W. 22 miles. Remedios bay lies just to the southward of the latter point. Shelter in a northwest wind may be obtained here.

Anchorage.

The best anchorage is in 10 fathoms, a third of a mile from the beach, off a red hill 200 feet high.

Angeles, or
Angel de la
Guardia island.

Remedios point is low and sandy, with the high coast-range a short distance back. Off this part of the coast is the great island of Angeles, or Angel de la Guardia. It extends 40 miles parallel with the coast, and is high, rocky, and perfectly barren. The whole western side is inaccessible and without anchorage; but on the eastern side there are several open bays where anchorage may be found in northwest winds. Off its northern end are several small islands, the largest of which is called Mejia island.

Anchorage.

Puerto Refu-
gio.

Between Angeles and Mejia islands is a fine harbor called Puerto Refugio in which vessels may anchor, sheltered from every wind.

One mile and two-tenths N. 49° 30' E. from the entrance

to this harbor is a remarkable white rock 158 feet high, called Sail rock.

To enter the harbor from the westward it is necessary to pass to the northward of Sail rock, as there are several dangerous rocks both covered and awash at high water, bearing N. 61° E. one mile distant from Sail rock, and two-tenths of a mile from the shore.

The channel between Angeles island and the mainland is known as Ballenas, or Whale channel. The tide sets through here at times with great force. We experienced a current of at least 3 knots per hour.

From Remedios point to point Final is N. 59° W. about 46 miles. All this part of the coast is high, rocky, and precipitous, affording no shelter or anchorage the entire distance.

Remedios point
to point Final.

Above point Final, the coast sweeps to the southward and westward, forming the open bay of San Luis Gonzales. Good anchorage in a southeast wind may be found here. The island of San Luis lies N. 45° W. 12 miles from point Final. It is of small extent, of volcanic origin, and is about two miles and a half from the coast, which is here low and sandy. The highest peak is 681 feet. A sand-spit extends nearly a mile from the southern end of the island, leaving a safe passage of a mile and a half between it and the mainland.

Anchorage.

Point Final to
point San Felipe.

San Luis isl-
and.

Good anchorage for either of the prevailing winds may be found here; on the southern side of the sand-spit for a northwest wind, and on the northern side for a southeast wind. About 400 yards from the northern end of San Luis, and connected with it by a reef covered at high water, is the high, rocky islet of Cantalla. There are several rocks covered at high water, in this vicinity.

Anchorage.

Parallel to the coast and 3 or 4 miles from it, are three small islets between 300 and 500 feet high.

The coast from abreast of San Luis island to point San Felipe, in latitude 31° 02' 30" N., trends about N. 25° W., and is low and sandy the whole distance, the coast-range rising to a height of several hundred feet a few miles in the interior. The water is shoal, there being from 12 to 15 fathoms 5 or 6 miles from the shore.

To the southward of point San Felipe, which rises to a height of 500 feet, is the small bay of the same name, in which some shelter can be found in a northwest wind.

S. 70° W. from point San Felipe is the mountain of Calamahue, 9,130 feet high, the highest we have seen in Lower California. It is nearly white on top and jagged in appearance.

Point San Felipe to Shoal point.

Consag rock bears N. 56° E. from point San Felipe, distant 19 miles. It is small, 308 feet high and nearly white, and is sometimes called Ship rock from its resemblance to a ship under sail. There are several rocks extending nearly a half a mile from it in a southwesterly direction.

The coast above point San Felipe is low, sloping back to a range of mountains from 1,500 to 2,000 feet high, several miles in the interior. Mud flats and shoals extend nearly to the Sonora shore, having, however, a narrow channel with from 2 to 5 fathoms between the flats and the mainland.

Colorado river.

Shoal point, at the entrance to the Colorado river, on the Sonora shore, bears N. 24° E., 30 miles from Consag rock.

Port Isabel.

Above Shoal point, which is low and sandy, there is a channel with from 2 to 5 fathoms at low water as far as the slough at port Isabel.

The only safe guide is the lead, as the flats and shoals are constantly shifting.

Tides.

The tide runs with great strength at the full and change of the moon, at times as much as six miles an hour.

It is high water at port Isabel (F. & O.) at 2h. 30m., and an hour earlier at Shoal point. Spring tides in summer rise 32 feet, in winter 28 feet.

FROM THE COLORADO RIVER TO SAN BLAS AND CAPE CORRIENTES.

Winds.

The prevailing winds in the gulf of California, from November to May, are from the northwest, and from May to November, from the southeast.

During the season of the northwest winds the weather is always fine; though, toward the head of the gulf, during the months of December, January, and February, moderate gales from the northwest are frequently experienced.

During the rainy season, or from May to November, southeasterly gales may be expected at any time below Guaymas, and occasionally a local hurricane or cyclone, known as "El Cordonazo," blows with great violence. This latter is generally toward the end of the rainy season. After this the weather clears, the northwest wind sets in, and fine weather for six or seven months follows.

The currents depend in a great measure upon the prevailing winds. Between Guaymas and San Blas they are strong and irregular during the rainy season. Currents.

In the upper part of the gulf, above Guaymas, the tides ebb and flow regularly, increasing in strength until the mouth of the Colorado is reached, where the ebb tide frequently flows at the rate of 5 or 6 knots per hour. Tides.

From Shoal point the coast sweeps to the eastward for many miles, forming the open bay which was named by Lieutenant Hardy, R. N., Adair bay. This bay is nearly 30 miles deep, entirely open to the southeast and not navigable even for the smallest coasters, being filled with dangerous shoals. Shoal point to Rocky point.

S. $78^{\circ} 30'$ E. $45\frac{1}{2}$ miles from Shoal point is a low black point, named by Lieutenant Hardy, Rocky point.

About 5 miles to the northward and westward is a headland 396 feet high, and between the two is the small open bay called Rocky bay.

All the coast of Sonora from Shoal point to San Ignacio river, in latitude $30^{\circ} 35'$ N., is of low sand-hills, and with the exception of some low stunted bushes, entirely destitute of vegetation. San Ignacio river only breaks through the sand-bar at its mouth during the rainy season, but fresh water may be obtained at all times just back of the sand-hills.

From Rocky point to George's island, S. $55^{\circ} 30'$ E. 20 miles, the coast falls away to the eastward, forming the open bay of the same name as the latter point. Rocky point to George's island.

George's island is of small extent, and is merely a barren rock 206 feet high. George's island.

For a distance of $11\frac{1}{2}$ miles to the northward and westward of the island rocks extend, some above water and others awash at low water.

A tolerable anchorage in a southeast wind may be found on the northern side of the island, off a small sand-beach Anchorage.

covered at high water, which connects the island with the nearest rock.

George's island
to cape Topoca.

From George's island to cape Topoca, or Topoca hill, as it is sometimes called, is S. $36^{\circ} 30'$ E. $48\frac{1}{2}$ miles.

Below San Ignacio river the coast is higher than above, the hills approaching nearer the sea.

Topoca bay.

Cape Topoca is 300 feet high and of a reddish color. When first seen from the northward it shows as an island. Another higher hill, of 540 feet, just to the northward of the cape, of a dark red color on a yellow bed, is an excellent guide to the anchorage in Topoca bay to the southward of the cape.

The extreme western point of this bay is low and rocky, with a reef covered at high water, extending off a short distance to the southward.

Anchorage.

A good anchorage may be found inside this point, in 5 or 6 fathoms at low water, well sheltered in a northwest wind. Spring tides rise about 15 feet and neap about 12 feet.

Cape Topoca to
cape Lobos.

From cape Topoca to cape Lobos is, S. $31^{\circ} 30'$ E., 23 miles. The coast for about 13 miles to the southward of the former cape is low and sandy, with sand-cliffs from 25 to 50 feet high just back of the beach, and the coast range a short distance inland. At this point is a rocky headland 1,640 feet in height.

Anchorage of
Libertad.

Around this headland is the bay or anchorage of Libertad. Here a vessel will be well protected in a northwest wind, but exposed to a southeastern. Anchor in eight or nine fathoms about half a mile from the head of the bay. Spring tides rise about 12 feet, neap about 9 feet. Cape Lobos is a rocky headland, of the same character as the one described above, 670 feet high.

Cape Lobos to
cape Tepopa.

From cape Lobos to cape Tepopa, S. $40^{\circ} 45'$ E., 39 miles, the shore-line is low and sandy, the coast-range rising to an elevation of from 600 to 2,300 feet a short distance back. The latter cape is a bold headland, 2,617 feet in height.

Patos island.

Patos island lies S. $14^{\circ} 35'$ W. $5\frac{1}{2}$ miles from cape Tepopa. It is small and low except on the northwest side, where it rises in a conical hill to the height of 310 feet. It is nearly white from the deposits of guano and entirely barren. There is a tolerable anchorage, in a northwest wind, on the

Anchorage.

southern side, in 5 fathoms, sandy bottom, a quarter of a mile from the beach.

Spring tides rise 10 feet, neap 7 feet.

The northern end of Tiburon island bears S. $27^{\circ} 30'$ E. 8 miles from cape Tepopa. The island is 29 miles long, S. by E. and N. by W., and $19\frac{1}{2}$ miles wide. It is high and rugged, its peaks varying in height from 1,000 to 2,500 feet. It is separated from the main land by a narrow intricate channel, called El Infiernillo, about two miles wide.

Off the northwest side is a small ensenada, named by Lieutenant Hardy, R. N., Fresh Water bay. Here ships may find shelter from southeast winds.

Off the southern end of Tiburon island, one mile and seven-tenths distant, is a small barren island, about one mile in length and 800 feet high, which I have called Turner's island. Between it and Tiburon is a small rocky islet, 150 feet high, leaving a clear channel three-tenths of a mile wide between the two last.

There is a dangerous rock, awash at high water, six-tenths of a mile S. 30° W. from the islet.

N. 69° E., 16 miles from the southeast end of Tiburon island, is a small island, 548 feet high, lying close to the mainland, and known as Pelican island.

Two and six-tenths miles S. 23° E. from Pelican island is a prominent point of moderate elevation, called Kino point. Between the island and this point is an open bay of the same name as this point, in which small vessels can find shelter in both northwest and southeast winds. At the bottom of the bay is the entrance to La Cruz lagoon.

From Kino point, the coast, which is low and sandy, trends to the southward and eastward about 40 miles to Morro Colorado, a remarkable headland of a reddish color, 560 feet high.

All this part of the coast is known as the San Juan Bautista flats.

Four and a half miles to the northward of Morro Colorado is the small estero of Tastiota, at the bottom of which fresh water may be obtained.

The island of San Pedro Martin bears from Morro Colorado S. 85° W. distant 49 miles, and from the south end of Tiburon island S. $7^{\circ} 45'$ E., $22\frac{1}{2}$ miles.

Morro Colorado
to San Pedro
point.

From Morro Colorado to San Pedro point, S. $48^{\circ} 30'$ E. $16\frac{3}{10}$ miles, the coast is high and barren, affording no shelter or anchorage. Six miles S. 49° E. from the former point, is a white rock 25 feet high, one and three-tenths miles from the shore. This and three others close in shore are called Las Piedras Blancas.

San Pedro bay.

San Pedro point is a bold, rocky headland 515 feet high. To the southward of the point is a small open bay of the same name, in which a ship may find shelter in a northwest wind.

The island of Pedro Nolasco lies S. $40^{\circ} 15'$ W. 8 miles from San Pedro point. It is a barren rock of volcanic origin, about two miles in length, parallel with the coast, and from 500 to 1,000 feet in height. It is inaccessible on every side.

San Pedro point
to San Antonio
point.

Point San Antonio lies S. 60° E. $10\frac{1}{2}$ miles from San Pedro point. Two miles to the northward of it is a group of small islands, known as the Algodones, the outer Venado island being about one mile from the shore.

About one mile to the eastward of point San Antonio are the remarkable peaks known as Las Tetras de Cabra, 1,580 feet high. This is a most valuable landmark in making the port of Guaymas, and once seen will never be forgotten.

Point San An-
tonio to cape
Haro.

From point San Antonio to cape Haro is S. $70^{\circ} 30'$ E. $11\frac{1}{2}$ miles. Two and a half miles to the eastward of point San Antonio is the entrance to Puerto de San Carlos, or Escondido. This small port is completely land-locked, and affords an excellent anchorage for small vessels, there being 3 and 4 fathoms of water inside.

Anchorage.

From Punta Doble, $2\frac{2}{3}$ miles to the eastward of point San Antonio, the coast sweeps to the northward and eastward, forming with Punta Colorada, five miles to the eastward, the Ensenada de San Francisco. On the eastern side of this ensenada, is the anchorage of Baco-chibampo, sheltered from the southeast. Fresh water, fresh beef, fruit, &c., may be obtained here.

Anchorage of
Baco-chibampo.

There are several islets in the Ensenada de San Francisco from 10 to 50 feet in height. About one mile to the northward of the anchorage of Baco-chibampo, is the cerro of the same name, 1,450 feet high.

The coast between Punta Colorada and cape Haro is high

and barren, cape Arco being 970 feet, and cape Haro 365 feet in height.

The southern point of the island of Pedro Nolasco bears N. $84^{\circ} 30'$ W. $24\frac{7}{10}$ miles from cape Haro.

The plan of Guaymas, by Captain Kellett, R. N., and the remarks of Captain Trollope, R. N., found in Findlay's "North Pacific Directory," are all that are required. Guaymas.

The island of Trinidad to the westward of the entrance is now known as San Vicente. San Vicente isl-
and.

The population of Guaymas in January, 1874, was about 4,000.

Fresh water is of an indifferent quality and is expensive; Wood and
water. the same may be said of the wood.

Excellent flour, fresh bread, and beef, may be obtained in any quantity and at moderate prices. No salt provisions or ship's stores can be purchased. Fresh provis-
ions.

At present the Colorado River Steam Navigation Company has a small quantity of coal for steaming purposes deposited here.

From Morro Inglese the coast trends to the eastward for $12\frac{8}{10}$ miles to another conical hill, 450 feet high, known as Cerro Yacicoris.

This part of the coast, a smooth sand-beach, is called El Cochori.

From Cerro Yacicoris to Lobos point is S. 9° E. $30\frac{7}{10}$ miles. Midway between the two is the mouth of the New Yaqui river. Formerly the mouth of this river was just to the eastward of Cerro Yacicoris. The mouth of the Yaqui is filled with shoals and sand-bars, and in the dry season is only navigable for the smallest coasters. Cerro Yacicoris
to Lobos point.

The coast between Cerro Yacicoris and point Lobos is low and sandy, being merely a narrow steep of sand separating the sea from the numerous lagoons.

About 20 miles inland, and to the eastward of Cerro Yacicoris, is a range of mountains known as the Sierra Yaqui, the highest peak of which, mount Bacatele, has an altitude of 3,100 feet.

Lobos point is the southwest extreme of Lobos island, and is low and sandy, with a dangerous shore making off nearly two miles to the northward and westward.

Lobos island is low and sandy, and is separated from the mainland by the narrow Estero de la Luna. It is $4\frac{3}{10}$ miles Lobos island.

long. The highest part of the island is a remarkable green mound, 75 feet high, about a mile to the southward and eastward of Lobos point, called Monte Verde. Between the hill and the point is a solitary palm-tree, by which the locality is recognized by the coasters.

Forty-six miles N. 66° E. from Lobos point, and to the southward of Sierra Yaqui, is the small range of Cerro Baroyeca, the highest peak of which has an altitude of 1,280 feet.

Lobos point to
Ciaris island.

From Lobos point to the northwestern end of Ciaris island, S. 71° 45' E. 42 $\frac{3}{16}$ miles, the coast is of the same character as that to the northward, low and sandy, covered with bushes, and cut up by lagoons, off the entrances to which shoal water extends from one to two miles.

Ciaris island.

Ciaris island is similar in appearance to Lobos island, and can only be distinguished from it by the absence of the palm-tree. It is about 12 miles long, and is separated from the mainland by a narrow estero of the same name.

Ciaris island to
Arboleda point.

Twelve and two-tenths miles S. 32° E. from the northwest end of Ciaris island is Arboleda point. A few miles inland of this latter point is a remarkable clump of trees, the only ones in this vicinity, and an excellent landmark.

Arboleda point
to Punta Rosa.

From Arboleda point the coast trends to the southward and eastward 12 $\frac{1}{2}$ miles to Punta Rosa, a low reddish point

Santa Barbara
bay.

at the west end of Santa Barbara bay.

Anchorage.

On the western side of this bay, and about a mile inside Punta Rosa, is an excellent anchorage in northwest winds, but entirely open to those from the southeast.

The best anchorage is in 6 or 7 fathoms three-fourths of a mile from the shore, with the ruins of an Indian house on the beach bearing NNW.

The country in this vicinity is fertile and well watered, and quite thickly populated. About eight miles from the mouth of the Mayo, and on its right bank, is the Indian town of Santa Cruz.

The Mayo, like all the rivers on this coast, is closed by a bar, leaving a narrow channel on the eastern side of 2 fathoms in the dry season.

N. 45° 30' E. 32 miles from the mouth of the Mayo, is mount Alamos, 1,980 feet high, an excellent land-mark in navigating the coast.

From the Mayo the coast trends to the southward and eastward to the estero de Agiabampo, the southern mouth of which is S. 34°30' E. 26½ miles distant. Between these points the coast is of the same character as that above. Mayo river to Agiabampo.

The observation spot was on a sand-hill 75 feet high, and near a wooden cross, put there as a mark for entering the estero. Observation spot.

The entrance to the estero is narrow and intricate, being between shoals and sand-bars. We found 2 fathoms at low water on the bar.

To enter the estero bring the cross or hill to bear east, and steer directly for it until inside the northern shoal, then haul up and run parallel to the shore.

The town of Agiabampo is 9 miles from the cross. Dyewood, silver-ore, and treasures are shipped from this port. Agiabampo.

Twelve and a half miles S. 16° W. from the cross is the mouth of the small river de Alamos, only navigable for the smallest coasters. Agiabampo to Alamos river.

Four miles to the southward of this river is a remarkable hill, 406 feet high, called Alligator hill. It serves, with mount Alamos, as an excellent land-mark for finding Agiabampo.

The river del Fuerte, or Santa Maria de Ahome, is 11½ miles S. 11° W. from the river de Alamos. It is only navigable for small coasters. In the rainy season large quantities of dye-wood are floated down in rafts and flat-boats. Alamos river to Santa Maria de Ahome river.

Shoal water extends for a long distance off the mouth of this river.

Point San Ignacio is 19½ miles to the southward of the mouth of the above-named river. A very dangerous shoal extends off this point three or four miles to the westward, also to the southward about a mile. The coast turns sharply to the northward from point San Ignacio for about two miles, and then to the southward and eastward, forming the open bay of San Ignacio. River Santa Maria de Ahome to point San Ignacio.

There is a good anchorage in this bay in northwest winds, but to southerly winds it is entirely exposed. Anchorage.

Eleven and a half miles S. 84° 30' E. from point San Ignacio, is the entrance to the harbor of Topolobampo and the inland sea of San Carlos. San Ignacio point to Topolobampo harbor.

The entrance to this harbor is between two lines of breakers, and is exceedingly narrow and intricate. The depth is from $2\frac{1}{2}$ to 3 fathoms on the bar at low water, but as the shoals are constantly shifting, no sailing directions for crossing the bar can be given further than keeping between the two lines of breakers.

Before entering this fine bay with a vessel drawing more than 12 feet, it would be necessary to sound and buoy the channel.

The Farallon of San Ignacio, a small barren rock 300 feet high, 10 miles S. $10^{\circ} 30'$ E. from San Ignacio point, and the high lands of Topolobampo and San Ignacio, are excellent landmarks for making the anchorage off the mouth of the harbor.

Commander Truxton, United States Navy, in 1869 found the channel leading into this bay to be to the eastward of the small sand marked A on his plan, while we found the deepest water on the western side of the island.

Anchorage.

Inside the shoals there is an excellent anchorage in 7 or 8 fathoms, sheltered from every wind.

Topolobampo
harbor to boca
Navachista.

Twenty-two and a half miles S. $72^{\circ} 30'$ E. from the entrance to Topolobampo harbor is boca Navachista.

Anchorage.

The anchorage is in 6 fathoms, between two and three miles from the shore. The entrance is narrow and intricate, with 7 feet on the bar at low water. It has become so shallow that the town of Navachista is fast becoming depopulated, and its rival, Playa Colorada, increasing to a corresponding extent.

Seven miles to the northward and westward, in the lagoon, is a remarkable white rock, 75 feet high.

Water.

On the small sand-island of Vinorama, which lies between the islands of San Ignacio and Macapule, tolerable good fresh water may be obtained by sinking wells. There are several cotton farms or ranchos on this island.

Boca Nava-
chista to boca
Playa Colorada.

Sixteen miles to the southward and eastward of boca Navachista is the mouth of the river Sinaloa, useless for navigation.

Entrance.

The entrance to the estero of Playa Colorada lies S. 75° E. $25\frac{1}{2}$ miles from boca Navachista. It lies between two lines of shoals on which the sea breaks even in moderate weather. The depth of water in the channel is only 9 feet,

but during the rainy season there is said to be 12 feet of of water on the bar.

The anchorage is in 5 or 6 fathoms about four miles from the mouth of the estero, and at the head of the banks or shoals making off to the southward and westward. Anchorage.

To enter the estero pull in for the beach to the eastward of the entrance, to within half a mile of the shore, and then pull parallel to the shore-line, passing between the two lines of breakers, and carrying from 9 to 12 feet at low water. The tides rise 6 feet.

The little town of Playa Colorada is four or five miles from the mouth of the estero, and contains about 200 inhabitants. Playa Colorada.

Large quantities of dye-wood are annually shipped from here.

The entrance to the estero of Altata bears from the boca Playa Colorada S. 45° E., distant 39 miles. All this part of the coast is low and dangerous, as shoals make off to long distances, particularly off the Tule estero, 10 miles above Altata, and as far to the northward and westward as Altamuna point, 9 miles above boca Tule, where shoal water (4½ fathoms) is found 3 miles from the land. Boca Playa Colorada to Altata estero.

The anchorage off Altata estero is in 6 fathoms, 3½ miles from the entrance with the saddle of El Dorado, in range with the distant Double Peak, bearing N. 43° E. This is also the range for entering the estero, with 2½ fathoms on the bar at low water. The tides rise 6 feet. Small vessels find an excellent anchorage, sheltered from every wind, off the village of Altata, inside the estero. Anchorage.

Altata, the seaport of Culiacan, is a small village near the Culiacan river, which empties into the estero about 3½ miles from the mouth of the latter. Large quantities of dye-wood are shipped from here. Altata.

S. 62° E. 39 miles from Altata estero, is boca Tavala, or river San Lorenzo. Estero of Altata to San Lorenzo river, or boca Tavala.

All this part of the coast is low and sandy, but the water bar above, and no shoals exist to the southward of those off the estero of Altata until the latitude of San Lorenzo river is reached. The low land extends many miles inland to moderately high ranges of hills or mountains.

The anchorage off the Rio San Lorenzo is in 6 or 7 fathoms, 2 miles from the beach, with the round-topped peak Anchorage.

of the distant range of mountains bearing N. 34° E. This peak is 4,700 feet high, and distant from the anchorage 61 miles.

Ships come here for dye-wood.

The river in the dry season is only navigable for coasters drawing 5 feet.

Rio San Lorenzo or boca Tavala to punta Piastla.

From boca Tavala to Punta Piastla is S. 53° 30' E. 48 $\frac{7}{10}$ miles. The coast between them is low and sandy, but free from outlying shoals. From 15 to 20 miles inland is the Sierra de San Sebastian, from 1,000 to 4,500 feet high, and extending for thirty miles parallel with the coast.

Elota river.

Fifteen miles above Punta Piastla is the Elota river, a mere creek in the dry season, but during the rains a turbid torrent. About 30 miles up the river is the village of Elota.

Three miles to the northward of Piastla point is the river of the same name, which, like the Elota, is a mere creek until the rainy season converts it into a torrent.

Vessels which come here for dye-wood anchor in 5 or 6 fathoms, half a mile from the beach and abreast of a pier and some huts on the shore.

Punta Piastla is a rocky headland, 110 feet high, with a reef extending off a short distance to the southward and westward.

Punta Piastla to Camaron point.

S. 49° E. 26 $\frac{1}{2}$ miles from Punta Piastla is Camaron point, a rocky bluff 60 feet high, with a hill 335 feet high about a mile inland. The coast between these two points is low and sandy, except at Grueza point. Midway between them lies a rocky bluff surmounted by a hill 90 feet high. Nine miles to the northward and eastward of Grueza point is a double peak, 2,160 feet high. Five miles to the westward of the double peak is a solitary table-peak 1,220 feet high.

Pajaros island.

Pajaros island lies S. 22° E. from Camaron point, and is 2 $\frac{1}{2}$ miles distant. It is 360 feet high, half a mile long, and is about half a mile from the shore. One mile to the southward

Venado island.

of it is Venado island, the highest peak of which has an altitude of 510 feet. It is rather larger than Pajaros, but of the same character, rocky and barren.

Five miles and a half to the southward of Pajaros island is Creston island, at the entrance to Mazatlan, the highest peak of which is 484 feet. Panama rock does not exist.

The coast between Guaymas and Mazatlan is low and dangerous, and should be approached only with the greatest caution. During the rainy season the currents are strong and variable, particularly off the mouths of the small rivers and esteros.

The plan of Mazatlan, by Captain Beechey, R. N., and the remarks in Findlay's "North Pacific Directory" are all that is required. Mazatlan.

There is a flag-buoy over Blossom rock, and a signal-station on the hill back of the fort. The altitude of the hill, as determined by barometric measurement, is 200 feet.

Ciervo island is 250 feet high, South Hermano 152 feet, and Tortuga rock, to the eastward of Hermano, about 5 feet.

In approaching the pier off the custom-house at Mazatlan, strangers would do well to give the shore a good berth, and pull for the outer end of the pier, as there are several sunken rocks between the pier and fort, on which boats would strike at half tide.

During our stay here, from the 6th to the 18th of February, we experienced light northwesterly winds during the day and calms at night. The thermometer ranged between 70° and 75° Fahr.

From Mazatlan to rio Chamatla, or Del Rosario, S. 57° E. 31 miles, the coast is low and sandy, and covered with bushes. There are no outlying dangers, the water deepening gradually from the shore to 10 or 12 fathoms, two miles distant. Mazatlan to
rio Chamatla or
Del Rosario.

Ten miles to the eastward of Mazatlan is the rio Barron, like the Chamatla, only navigable in the dry season, for small boats and canoes.

Midway between Mazatlan and the Chamatla river, and 9 or 10 miles from the coast, is a remarkable sierra, from 1,200 to 1,765 feet high, known as La Cabeza de Caballo.

Near the mouth of the Chamatla are the hills of the same name, from 560 to 785 feet high. A few miles above the mouth of the river are the small towns of Chamatla and Rosario.

The anchorage is in 6 or 7 fathoms, a mile off the mouth of the river. Anchorage.

Eighteen or twenty miles from the coast is a mountain

range from 2,000 to 3,600 feet high, and back of it another still higher.

Chamatla river
to the Rio Bayona.

Twenty-six miles to the southward of the Chamatla is the mouth of the rio Bayona, known as the boca Tecapan.

Anchorage.

The anchorage is about two miles from the entrance to the estero, in 6 or 7 fathoms. There are two channels leading into the estero, with 2 fathoms in the northern and $2\frac{1}{2}$ fathoms in the southern, at high water. With southwest winds, there is said to be a depth of 4 fathoms.

Water.

The sea breaks on the bar even in moderate weather. The best time to enter is in the early morning, before the sea-breeze springs up. There is a small Indian village near the entrance, where tolerably good fresh water may be obtained.

Boca Tecapan
to Camichin es-
tero.

From boca Tecapan, the coast, which is of the same character as that above, trends S. 17° E. 43 miles to the mouth of the Camichin estero. The country for many miles inland is low and level, only two or three hills, from 12 to 15 miles inland, being met with the entire distance.

Anchorage.

The anchorage off the boca Camichin is in 5 or 6 fathoms, half a mile from the shore. Ships come here for cedar and dye-wood.

Isabel island.

Isabel island bears N. 87° W. 22 miles from the boca Camichin. It is 285 feet high and nearly barren, and is one mile and seven-tenths long, NW. by N. and SE. by S., and about half a mile wide. There are several detached rocks near the islands, the most conspicuous of which are two pinnacle rocks nearly white, one 90 and the other 75 feet high, near its northeastern side. On the eastern and southeastern sides of the islands are sand-beaches, where boats may land in good weather.

Boca Camichin
to San Blas.

Eight miles below the boca Camichin is the entrance to the Asadero estero. The anchorage is in 5 or 6 fathoms half a mile from the beach. Ships come here for cedar, dye-wood, &c. Four miles below this estero is the rio Santiago, off which a dangerous shoal extends nearly three miles toward Piedra Blanca del Mar, leaving a safe passage by keeping near the rock.

Piedra Blanca del Mar bears S. 65° W. 5 miles from the mouth of the rio Santiago. It is a small white rock, 105 feet high.

From the mouth of the Santiago the coast trends S. 70° E. 8 miles to the entrance to San Blas harbor.

The Piedra Blanca de Tierra, a white rock of small extent, 58 feet high, with two smaller ones northeast and southwest of it, lies eight-tenths of a mile S. 42° E. from the entrance to San Blas harbor.

We found the plan of the harbor by Captain Basil Hall, R. N., all that was necessary. There are 12 feet of water on the bar at the entrance to the estero de Arsenal at low water, and 16 or 17 feet at high water.

San Blas.

Vessels must moor head and stern in the estero, as the channel is very narrow. Once inside, ships are sheltered from every wind.

Supplies of fresh beef, vegetables, wood, and water may be obtained here. The latter, of an excellent quality, is found in the ensenada Matenchén, 2½ miles to the eastward of San Blas.

Fresh provisions, wood, &c.

In making the port of San Blas, the saddle-peaked mountain of San Juan, 6,755 feet high, 18 miles E. by S. from the town, is an excellent landmark. There is also a coast range from 1,000 to 1,600 feet high between it and the coast. The land to the southward of the port is high, while to the northward it is low.

Off this part of the coast, and about 70 miles from San Blas, are Las Tres Marias islands. The group consists of four islands, extending 38 miles in a northeasterly and southwesterly direction. The southernmost, Maria Cleopha, is nearly circular, with a diameter of three miles. The highest peak has an altitude of 1,289 feet. A pinnacle rock 100 feet high lies off the southeast point about eight-tenths of a mile distant, and a white rock 225 feet high half a mile off its western side.

Las Tres Marias islands.

Maria Magdalena island is 8½ miles northwest of Maria Cleopha. It is higher than the latter, its highest peak being 2,384 feet. The island is 8 miles long, east and west, and from one to four miles wide. There are several detached rocks off its southeast end.

The channel between the two islands is free from all dangers.

Maria Madre island lies five miles to the northward and westward of Maria Magdalena, and is the largest of the group. It is 11½ miles long, nearly NW. and SE., and is

Anchorage.

from 3 to 6 miles wide. The highest peak is near the middle of the island, and is 2,414 feet high. There is a tolerable anchorage off the southeastern part of this island, and a beach to the eastward of the south point, where boats may land in good weather. Fresh water of an inferior quality may be obtained on this part of the island by sinking wells.

Water.

The channel between Maria Madre and Maria Magdalena islands is believed to be free from all dangers.

Off the north end of the former a dangerous reef extends nearly a mile toward San Juanito island.

San Juanito island, the northernmost and smallest of the group, lies 2 miles to the northward and westward of Maria Madre island. It is $2\frac{1}{2}$ miles long, N. by W. and S. by E., and is but 150 feet high.

A reef extends off its southeastern side nearly a mile toward Maria Madre, rendering the channel between them very dangerous. A white rock 150 feet high lies a mile off its western side.

These islands are of volcanic origin. The western sides of all of them are high, inaccessible cliffs, and perfectly barren, while the eastern sides are generally low and sandy, with some vegetation.

Wood.

Wood is plentiful.

South entrance to San Blas.

S. 21° E. 11 miles from the entrance to San Blas harbor, is the point and river of los Custodios, which mark the south entrance to San Blas.

San Blas to punta Raza.

Eleven miles to the southward is the small ensenada of Chacola, in which small vessels may anchor.

Anchorage.

Ten miles S. 20° W. from Chacola, is punta Raza, a reddish-colored point about 30 feet high, and between the two is the open bay of Jaltemba, in which ships may find shelter in southeast winds.

A small islet 80 feet high lies $2\frac{3}{10}$ miles to the eastward of punta Raza, in Jaltemba bay, and about 1 mile from the shore. Ships anchor between this islet and the beach when loading with dye-wood.

Punta Raza to punta Mita.

Twenty miles and a half S. 28° W. from punta Raza is punta Mita, the northwest point of Valle de Banderas bay. It is a low, narrow, projecting point, and dangerous from the many outlying rocks and reefs. About a mile inland from this point is a prominent hill, 590 feet high.

The coast-range from 300 to 1,000 feet high, borders on

the sea all the distance from punta Raza to punta Mita, with occasional sand-beaches.

About 3 miles S. 15° W. from punta Mita, lie two of the Marietas isl-
Marietas group of islands. They are both small, being less and.
than half a mile in extent, and the highest is 104 feet.

Seven miles S. 34° W. from punta Mita, is the third Marieta, a white rock 40 feet high, with a smaller one 15 feet high half a mile to the westward.

Between the third and second Marieta, and rather nearer the latter, is a very dangerous rock nearly awash at high water.

Seventeen miles S. 72° W. from punta Mita, is Corvetana rock, three-tenths of a mile long, east and west, of a whitish color, and 20 feet in height. A reef extends off a short distance on its western side.

There is a clear, safe channel between punta Mita and the two largest of the Marietas, keeping nearer the islands than the point, and an excellent anchorage for northwest winds, one mile and a half to the eastward of the point. A sunken rock lies half a mile to the southward of punta Mita, on which the sea breaks in rough weather. Anchorage.

From punta Mita to cape Corrientes is S. 14° W. $23\frac{1}{2}$ miles, and between the two is the fine bay of Valle de Banderas, 20 miles deep and from 9 to 17 miles wide. All the coast from cape Corrientes to the rio Real, at the bottom of the bay, is high and precipitous, with occasional valleys where small, fresh-water streams empty into the sea. Punta Mita to cape Corrientes, Valle de Banderas bay.

At the mouth of the small stream called rio Real, is the village of Peñas, where vessels come for dye-wood. Peñas.

Four or five miles to the southward and westward of this village, are three rocks lying near the shore, the highest 210 feet, known as Los Arcos. The other two are 20 and 30 feet high, respectively.

There is an anchorage in good weather off the mouth of the Real and close to the beach, and ships may obtain excellent fresh water from the river. Anchorage. Water.

From this river to punta de Piedra Blanca, about eleven miles to the northward and westward, the coast is low and sandy and covered with bushes.

Four miles to the northward of Peñas is the boca de Tomates, an estero into which the Rio de Valle, or Piginto, empties.

Anchorage. To the eastward of punta de Piedra Blanca is a small ensenada, where excellent anchorage may be found in north-west winds. From this point to punta Mita the coast consists of broken bluffs from 10 to 20 feet high, with occasional sand-beaches.

Cape Corrientes is a bold headland, 425 feet high, with the land rising a short distance inland to an altitude of 2,000 feet. One mile to the westward of the cape is the small so-called harbor of Corrales, but it is impossible to anchor there. A sunken rock, on which the sea breaks in rough weather, lies off the harbor, about three-tenths of a mile from shore.

REVILLA GIGEDO GROUP.

Socorro island. Socorro island, the largest of this group, is elliptical in form, its greater diameter being $10\frac{1}{2}$ miles N. by W. $\frac{1}{2}$ W. and S. by E. $\frac{1}{2}$ E. (See plan.) It may be said to be one mountain 3,400 feet high, which falls in gradual descent at all points on the south side. It is covered with a thick growth of cactus, which renders it almost impossible to penetrate into the interior. We saw no indications of fresh water on any part of the island. Fish were abundant.

Braithwaite bay. There is good anchorage in the fine season—that is, from December to June—in Braithwaite bay. This bay, or cove, is on the southeast side of the island, and may be recognized by its stony beach, the only one on the island, all other parts of the coast being iron-bound.

Observation spot. There is a good landing-place at the bottom of the cove, and our observation-spot was on the small sand-spot near the landing-place.

Anchorage. To anchor in this bay, bring the highest peak of the island to bear NW. by N., and anchor in 10 or 11 fathoms, a fourth of a mile from the beach.

Cape Henslord, on the northwest side of the island, is a perpendicular bluff 100 feet high. O'Neal rock, 45 feet high, lies $1\frac{3}{10}$ miles N. by W. of cape Henslord.

Cape Middleton, the northern point of the island, is a perpendicular bluff 50 feet high. Two small rocks, one 50 feet and the other 15 feet high, lie about a mile northeast of this cape. All the eastern side of the island consists of perpendicular bluffs from 15 to 100 feet, with no landing-place even in fine weather.

Cornwallis bay. Cornwallis bay, on the west side of the island, affords a good anchorage in easterly winds. It is necessary to ap-

proach quite near to the white coral beach, as the water is deep. The highest peak of the island bears from the anchorage E. $\frac{1}{2}$ S.

San Benedicto island bears N. 5° E. $36\frac{1}{2}$ miles from the highest peak of Socorro. It is a barren rock, $2\frac{6}{10}$ miles long, N. by E. and S. by W., and $\frac{1}{2}$ a mile wide. The highest peak is near the southern end, and has an altitude of 812 feet. Another peak, 708 feet high, is near the middle of the island. San Benedicto island.

On the eastern side of the island, near the middle, is a small shingle beach, where boats might land in good weather.

There are three small detached rocks off the west side, near the northern end and very near the island, from 60 to 200 feet high. A dangerous sunken rock, with 10 or 12 feet of water on it, lies 1 mile west of the extreme western point of the island.

Roca Partida lies N. 84° W. $67\frac{6}{10}$ miles from the highest peak of Socorro. It is a small, dangerous, barren rock, 87 feet high. It consists of two white pinnacle rocks, connected by a low ridge 20 feet high. This low part not being visible very far, the rock has the appearance of being separated. It is 300 feet long and 150 feet wide, and at a distance looks like a sail with jury-masts. Roca Partida.

Clarion, or Santa Rosa island, is of the same general character as Socorro, of volcanic origin, and covered with a thick growth of several varieties of cacti. It is about 5 miles long, nearly ENE. and WSW., and from 1 to 2 miles wide, being widest toward its western end, and consists of three prominent peaks, 1,117, 936, and 895 feet high, respectively, the highest being near the western end. Clarion, or Santa Rosa island.

There is a tolerable anchorage in northerly winds in Sulphur bay, on the south side of the island, and about midway between Shag rock and Rocky point. Anchorage.

The best anchorage is in 12 or 13 fathoms, $\frac{3}{10}$ of a mile from the sand-beach.

All other parts of the coast of this island are iron-bound, consisting of perpendicular bluffs from 80 to 600 feet high. A remarkable monument rock 200 feet high, with several others near it, lies off the northwest point of the island. Another detached rock 25 feet high lies $\frac{4}{10}$ of a mile off the north side.

A salt-water lagoon is near the beach at Sulphur bay, but no fresh water could be found. As doves are quite numerous there must be a supply somewhere on the island.

Fish and turtle were numerous, also many varieties of sea birds.

Our observation spot was at the mouth of the lagoon in Sulphur bay.

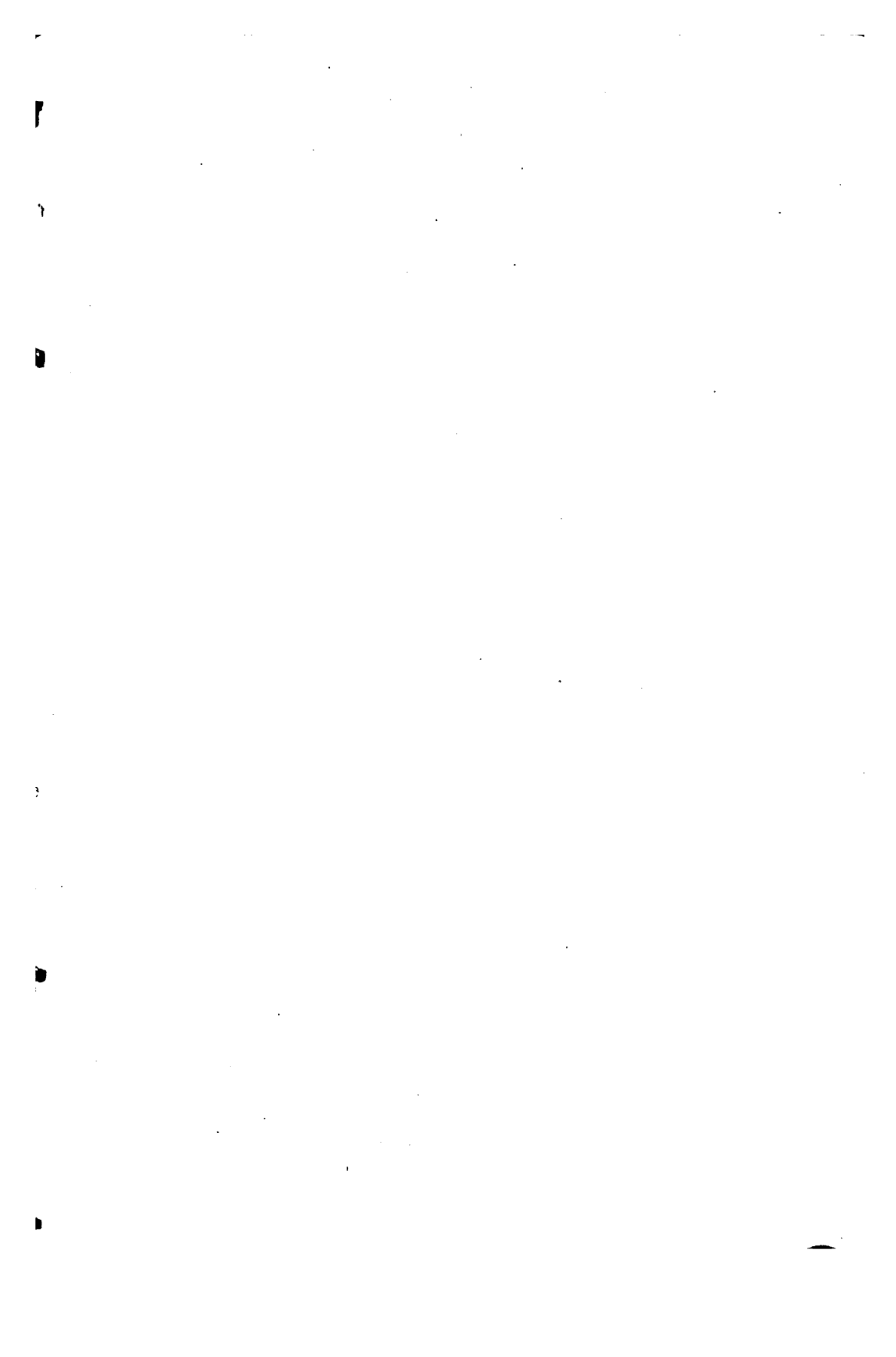
Table of positions established by United States steamer Narragansett, Commander George Dewey.

[The longitudes depend upon that of San Diego, Cal., being $117^{\circ} 09' 39''.975$ W., in time $7^h 48^m 38.665$; latitude $32^{\circ} 43' 06''.35$ N. Observation spot near astronomical station of 1871, marked by a brick monument $1\frac{1}{2}$ by 3 feet, and about 4 feet high.]

Observation spot.	Latitude N.	Longitude W.	Longitude in time.	Meridian distances.
	° ' "	° ' "	<i>h. m. s.</i>	<i>m. s.</i>
La Paz, El Mogoté.....	24 10 09.10	110 19 53.325	7 21 19.555
Point Lupona.....	24 24 16	110 19 44.525	7 21 18.967	0 0.588
Punta Arena.....	24 03 55	109 50 34.525	7 19 41.303	1 38.252
Pichilique bay.....	24 15 35.8	110 20 02.385	7 21 20.559	0 1.004
N. E. point of Ceralbo island ..	24 21 35	109 56 02.625	7 19 44.475	1 35.080
S. W. point of Ceralbo island	109 52 20.625	7 19 29.375	1 50.180
Observation point.....	23 32 37	109 28 29.625	7 17 53.655	3 25.900
San José del Cabo.....	23 03 24	109 40 14.625	7 18 40.975	2 38.580
Cape San Lucas.....	22 53 21	109 54 32.625	7 19 38.227	1 41.328
Todos Santos, (Point Lobos)....	23 24 37	110 13 52.025	7 20 55.446	0 24.109
Cape Tosco.....	24 17 52	111 43 45.285	7 26 51.012	4 31.457
Cape Redondo.....	24 30 50	112 01 34.185	7 28 06.279	6 46.724
Magdalena bay, (Sir E. Belcher)	24 38 20.1	112 08 50.187	7 28 35.346	7 15.791
Point Entrada.....	24 32 19	112 03 47.625	7 28 15.186	6 55.631
Cape Lazaro.....	24 48 44	112 18 30.425	7 29 14.027	7 54.472
Boca Soledad.....	25 16 27	112 07 52.225	7 28 31.481	7 11.926
Boca San Domingo.....	25 29 27	112 07 52.225	7 28 31.481	7 11.926
Boca San Georgia.....	25 37 35	112 07 59.625	7 28 31.975	7 12.420
Point San Juanico.....	26 03 27	112 18 13.635	7 29 12.909	7 53.354
Point San Domingo.....	26 19 02	112 42 24.625	7 30 49.845	9 30.290
Abreojos point.....	26 42 27	113 35 32.425	7 34 22.210	13 02.655
Todos Santos bay.....	31 51 25.8	116 37 54.900	7 46 31.660	25 12.105
Colnett bay.....	30 57 36.5	116 17 22.360	7 45 09.491	23 49.936
San Martin's island.....	30 29 03.8	116 06 30.500	7 44 26.033	23 06.478
Port San Quentin.....	30 21 59.1	115 58 59.670	7 43 55.978	22 36.423
San Geronimo island.....	29 47 05	115 47 43.800	7 43 10.920	21 51.365
Playa Maria bay.....	28 54 47	114 31 56.260	7 38 07.751	16 48.196
Lagoon head.....	28 14 11.5	114 05 34.695	7 36 22.313	15 02.758
Cerros island.....	28 01 48.4	115 10 49.215	7 40 43.281	19 23.726
Benito islands.....	28 17 37.5	115 36 11.190	7 42 24.746	21 05.191
San Bartholomé bay.....	27 39 51.7	114 54 14.880	7 39 36.992	18 17.437
Asuncion island.....	27 05 49.5	114 17 50.085	7 37 11.339	15 51.784

The meridian distances are taken from La Paz, that being the first meridian established.

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